VISIT…

01

10 Cubes

Puzzle Goal: **Construct a pyramid with a triangular or a hexagonal base, and then return the parts back into the box.**

Materials: Padauk, ebony and plywood

Classification: Put-together

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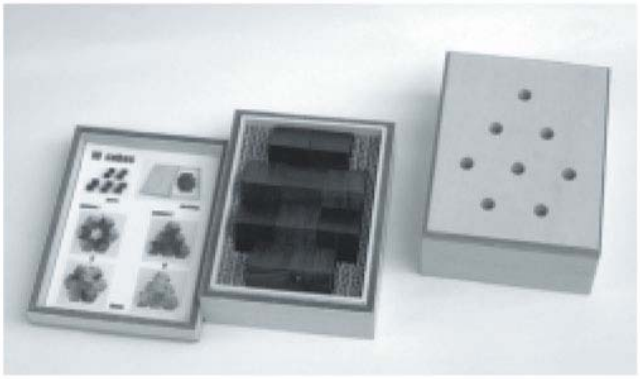
01

10 Cubes

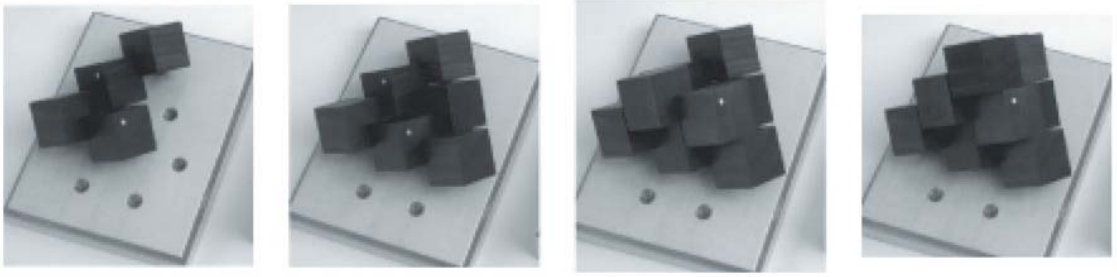
Puzzle Solution:

Box



Hexagon

Triangle



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02

14 ASIDE

Puzzle Goal: **Make a 2x2x2 dice cube in a checkered pattern that holds its shape by only using two twists and one fold. The number of pips on each face must be 14.**

Materials: Hard foam and elastic

Classification: Sequential movement

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02

14 ASIDE

Puzzle Solution:

Try to solve the puzzle before looking at this.

(1) Lay the puzzle flat on a table or a surface in two lines of four so that all the sixes point in one direction and all the ones point in the opposite direction.

(2) Twist the four pieces on the right 180 degrees.

(3) Fold the puzzle in half so that it looks like a cube.

(4) Holding the cube on the four left pieces with your left hand so that the puzzle will not spring apart, take the two right back pieces around the right side of the two right front pieces, at the same time sliding the two right front pieces backwards (this should happen in one motion). Now just rotate each cube into its correct position.

(5) If your puzzle is not a stable cube try to do it again but this time do the first 180 degree turn in the other direction.

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03

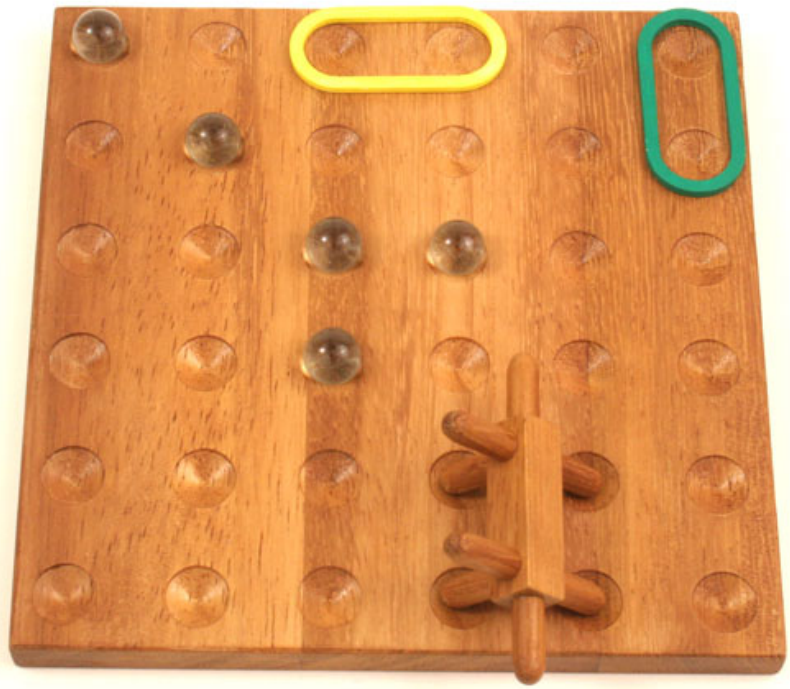
8BOT

Puzzle Goal: **Move the 8BOT from the starting position (yellow) to the final position (green).**

The 8BOT must "stand" on one or two legs, and can "roll" in any direction as long as it is again supported on its legs in the new position. The 8BOT cannot roll off the edge of the board nor onto any marble barriers. Multiple challenges are provided.

Materials: Wood, methacrylate and crystal balls

Classification: Sequential movement



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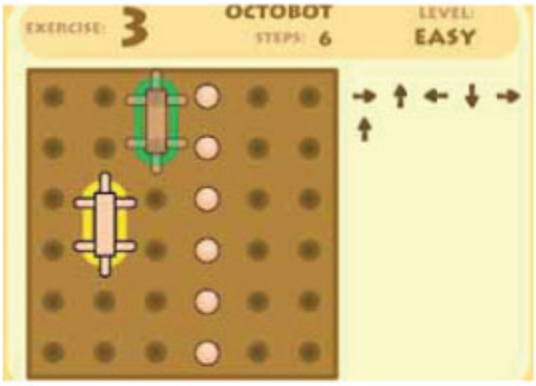
03

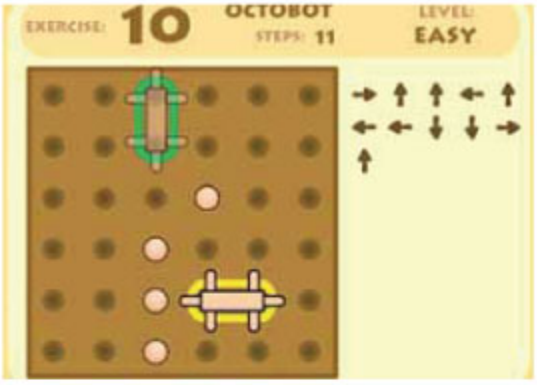
8BOT

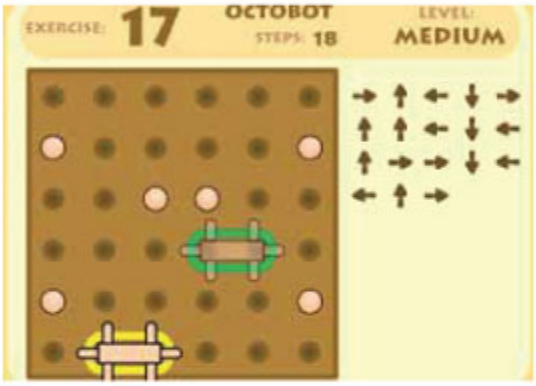
Puzzle Solution:

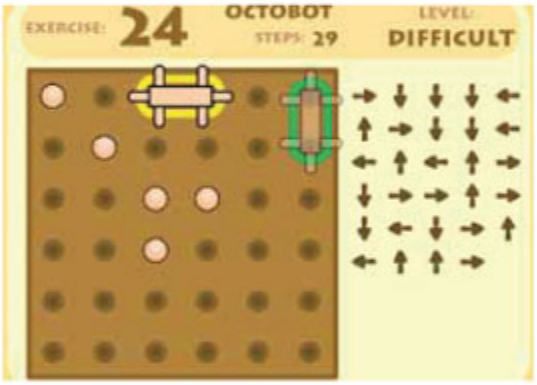
The solution for each challenge is given on the back of the card or booklet page (six samples below).

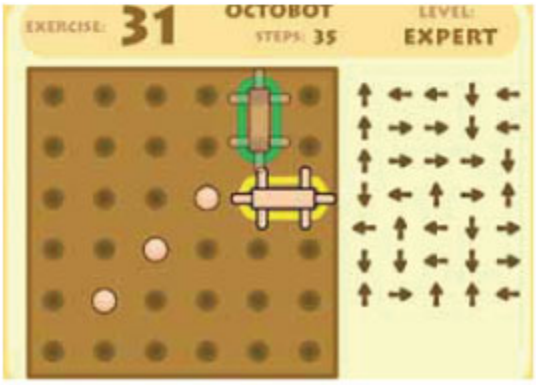
The arrows show the sequence and direction of moves that solve the challenge in the minimum number of moves.

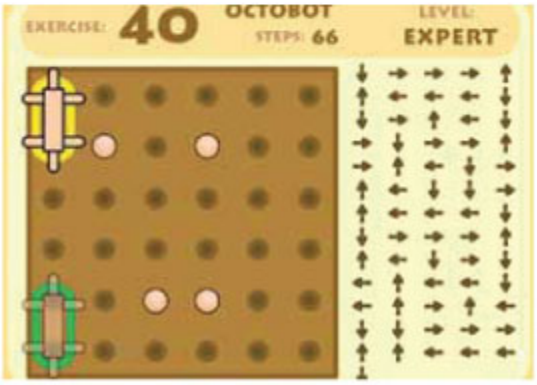












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04

A Maze in Torbus

Puzzle Goal: **Take apart by moving the inner twisted ring (Möbius ring) through a hidden maze cut into the Anti-Möbius ring.**

Materials: Rosewood

Classification: Take apart

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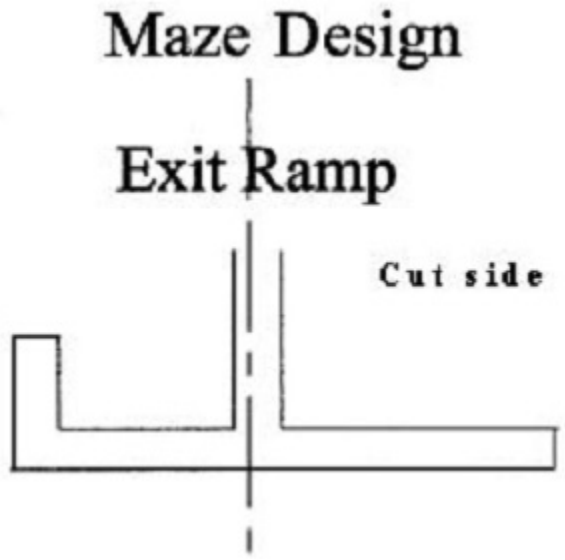
04 A Maze in Torbus

Puzzle Solution:

There are two double looped rings and one single loop ring. The single loop ring is the Möbius ring or twisted ring. The locking mechanism is the "maze channel" in the larger double ring (anti-Möbius ring) and the pin embedded in the Möbius ring.

Squeezing the small double loop ring (anti-Möbius ring) moves the Möbius ring and pin through the maze. The cuts are complex and each cut has a unique shape and purpose



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05

Arnold Dozenegger 82%

Puzzle Goal: **Pack all 12 disks flat into the ovoid tray.**

Materials: Acrylics and felt

Classification: H/D ASS 2D

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05 Arnold Dozenegger 82%

Puzzle Solution:

See solution photo. Or use the template on the underside of the tray as follows:

1. Copy the bottom of the puzzle.
2. Number the piece in order of increasing size.
3. Place piece #8 on the smallest circle of the photocopy, #11 on the next smallest, and so on until placing disk #2 on the largest circle (sorting the disks in alphabetical order!).
4. Shove the pieces toward the largest to make an ovoid with all 13 voids tricuspid.
5. Of the four possible reflections, choose the one that puts piece #7 closest to its home socket.

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06

ASURA

Puzzle Goal: **Disentangle the three pieces, and then reassemble the original form.**

Materials: Polyurethane plastic

Classification: Disentanglement /TNG

Notes: The motivation of this puzzle came from the statue of Asura, an ancient Indian deity having three heads and six arms. I was puzzled at recognizing which hands are attributed to each head.

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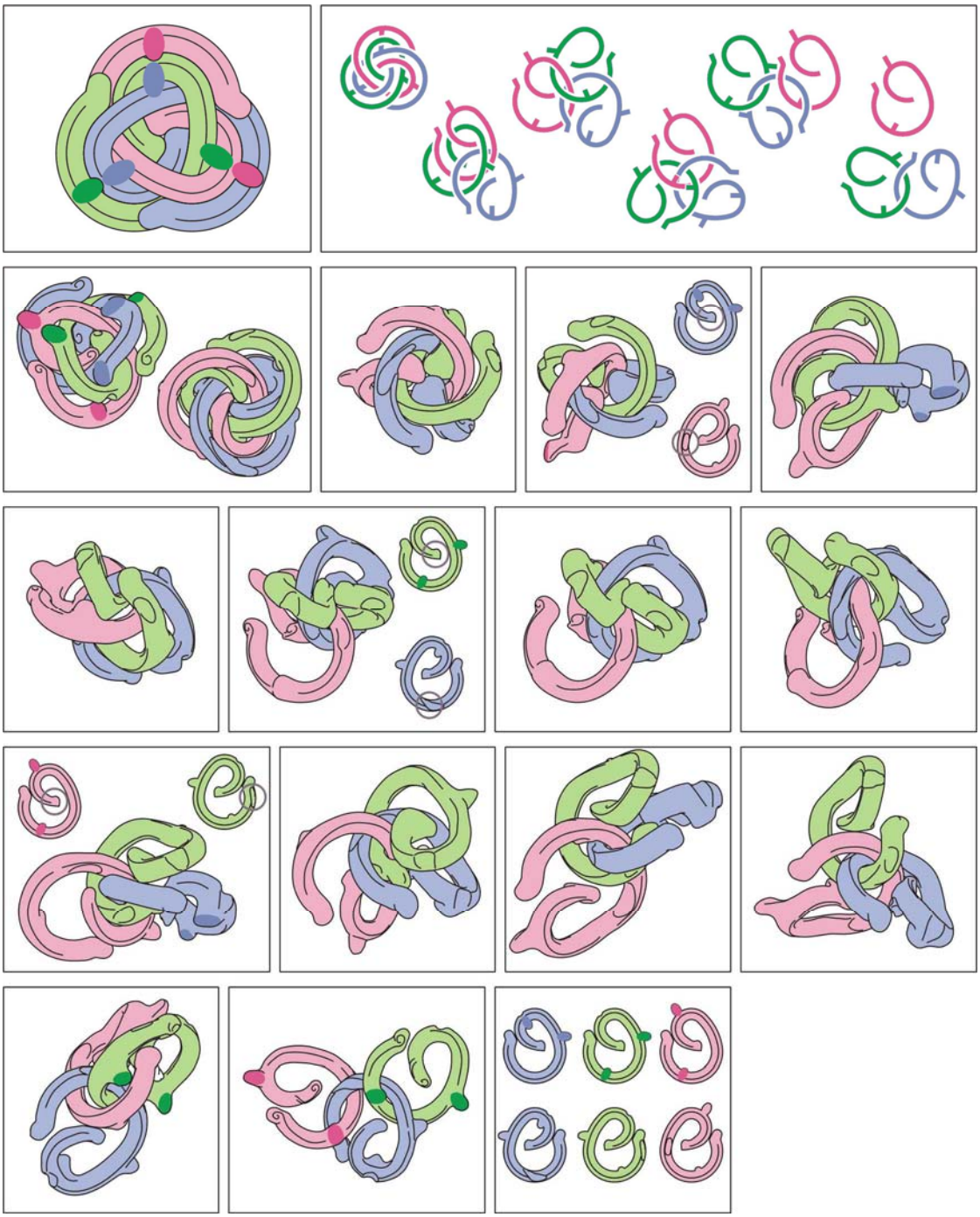
06

ASURA

Puzzle Solution:



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07

Bank Heist

Puzzle Goal: **Release the coin.**

Materials: Bubinga, stainless steel, aluminum

Classification: Take-apart

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07 Bank Heist

Puzzle Solution:

- For two of the four posts, the chains are connected loosely rather than glued. These two posts will unscrew from the base.
- The middle block of the base moves sideways.
- The bars will drop, releasing the coin.

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08 Bricks

Puzzle Goal: **Pack all pieces into the box.**

Materials: Wood

Classification: 3-D packing

Notes: This puzzle has the same structure as the Conway/Slothouber-Graatsma Puzzle, but scaled by 1.5x and 2x in two dimensions.

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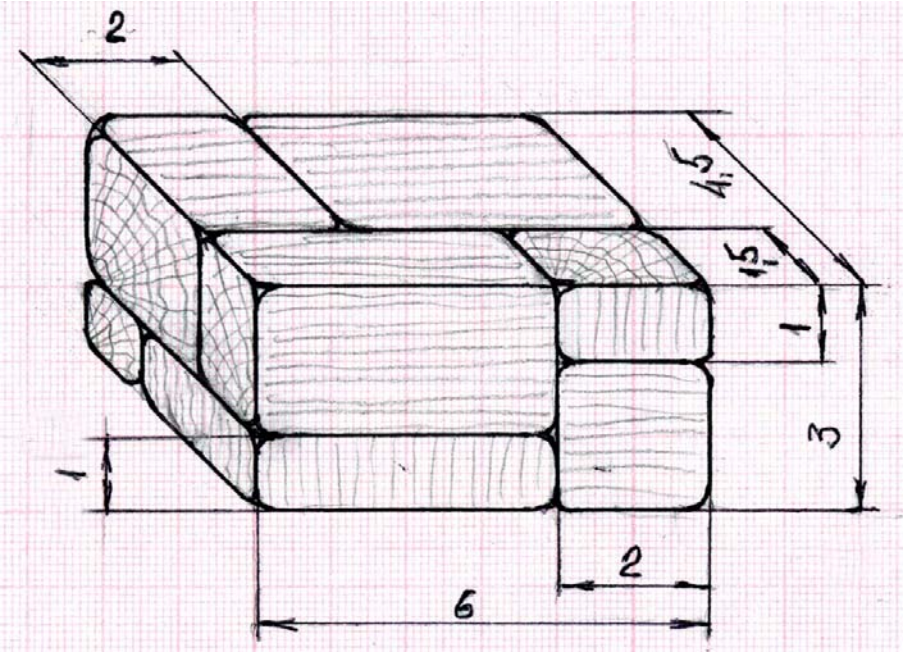
08

Bricks

Puzzle Solution:



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09

BurrNoose

Puzzle Goal: **Remove the 6 pieces from the "noose" (the square rings around them), and then reassemble.**

Materials: Walnut noose, with remaining pieces from wenge, padauk, bloodwood, rosewood, pau ferro and bocote

Classification: 3. 2 Interlocking solid - geometric object

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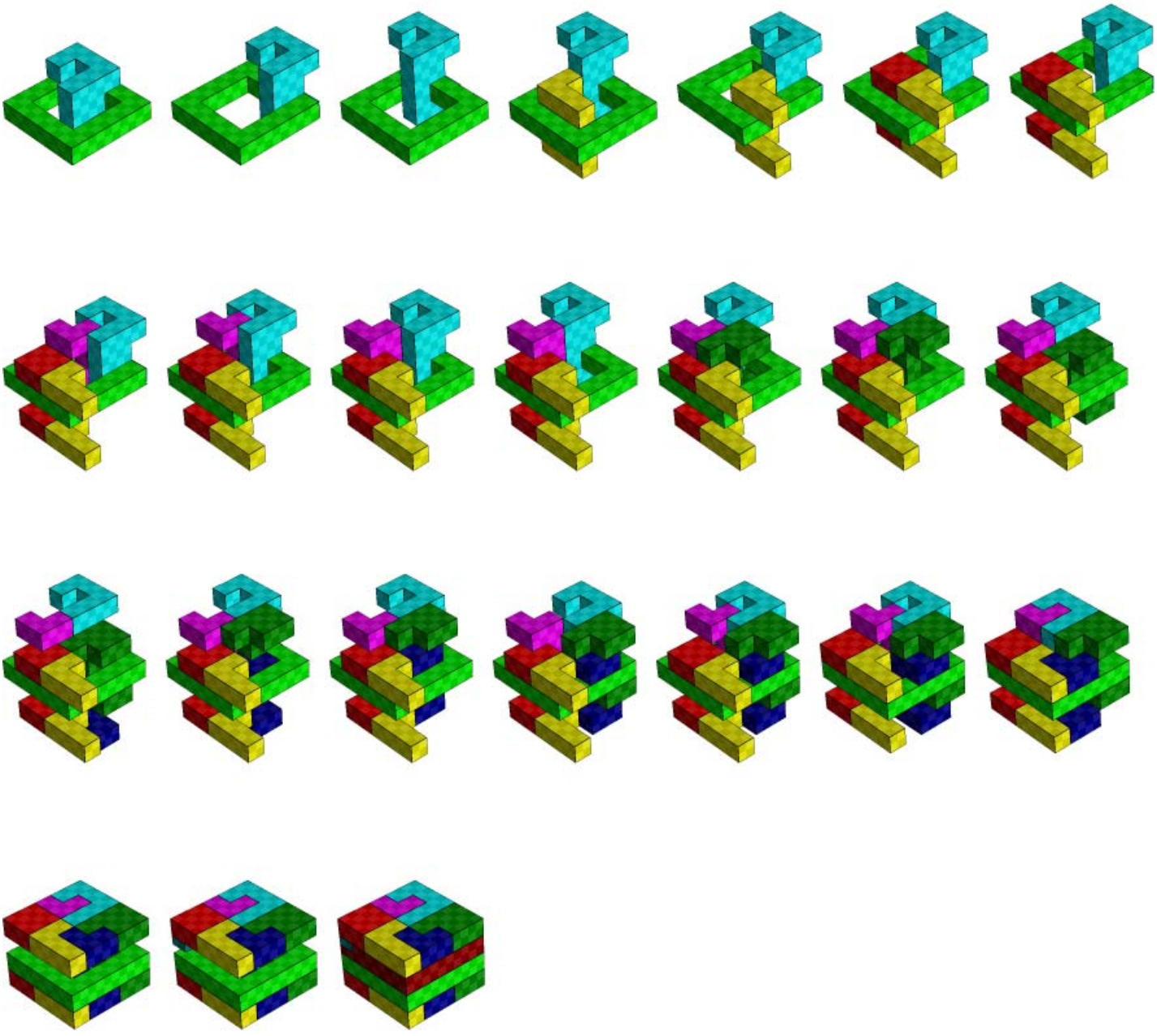
09

BurrNoose

Puzzle Solution:

One of the two "Noose" rings has one side that is held in place by two magnets. Once the key noose is removed, the six pieces slide loosely in the remaining noose. However, this is a level-8 disassembly.



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10

CM13

Puzzle Goal: **Assemble and disassemble using coordinate motion.**

Materials: Walnut

Classification: INT-POLY

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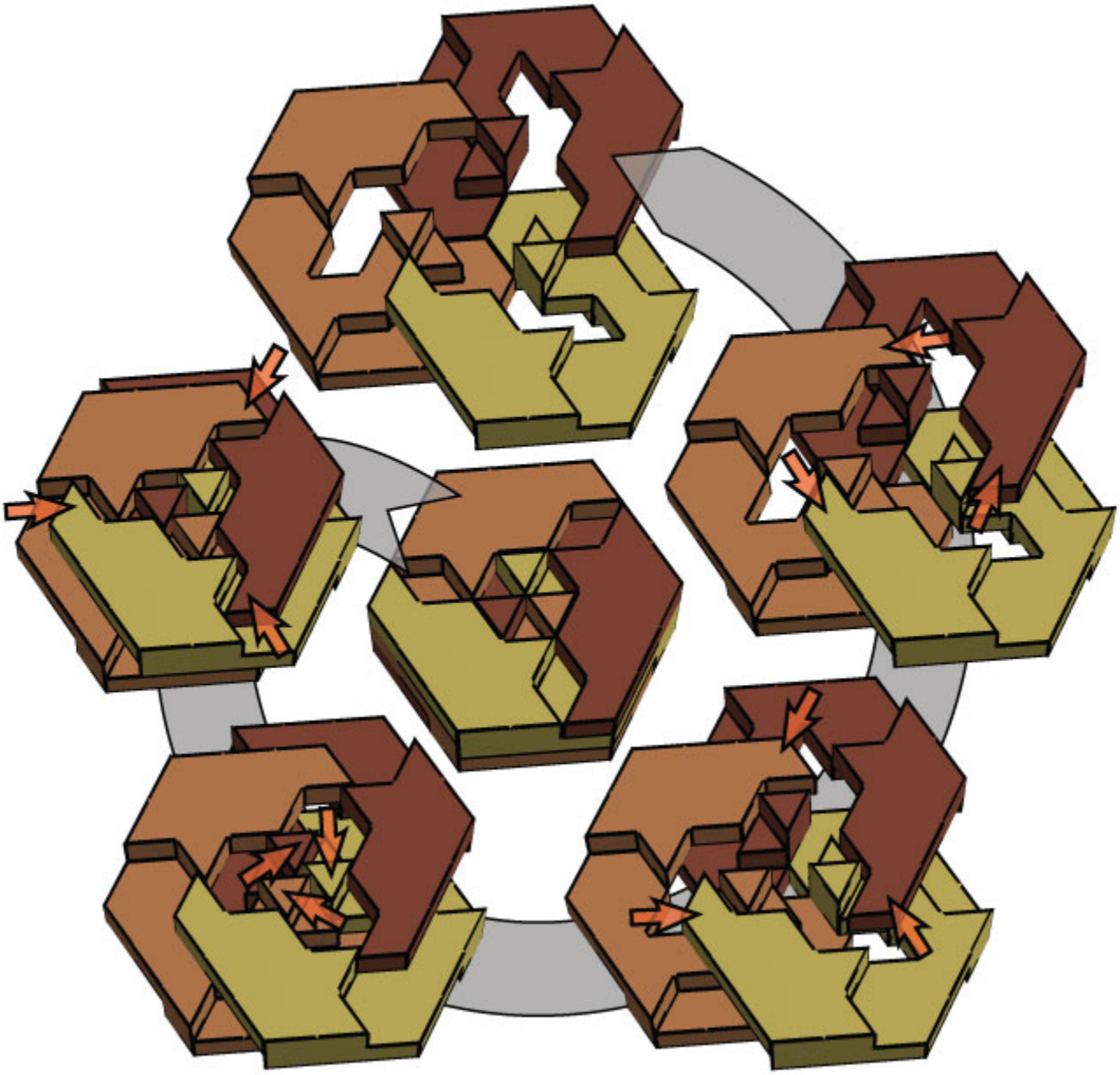
CM13

Puzzle Solution:



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11

Colour Cube

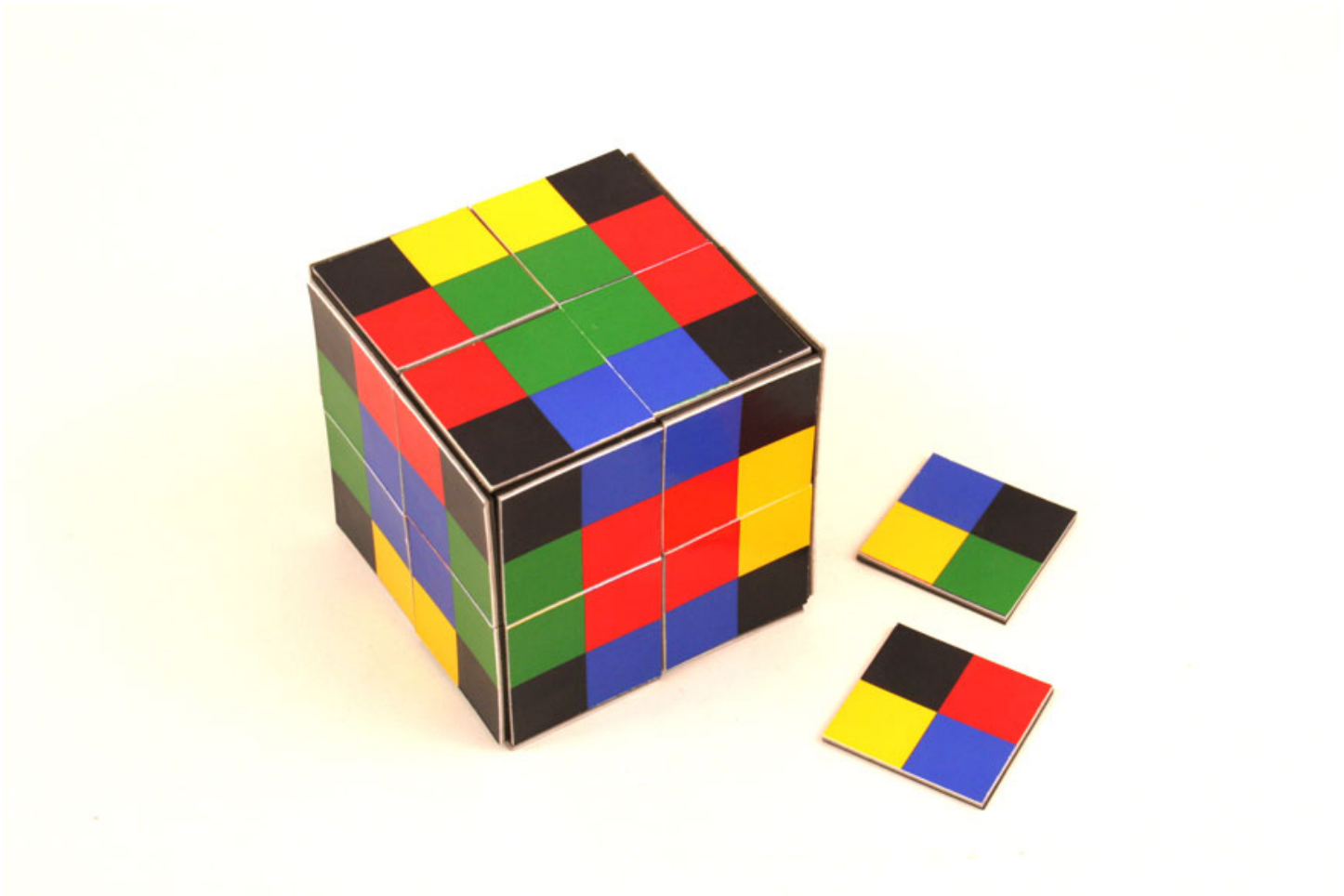
Puzzle Goal:

1. Place the 24 magnetic tiles on the base cube so that all the edge colors match.

2. Place the 24 magnetic tiles on the base cube so that the edge colors do not match (ignoring diagonals).

Materials: Polystyrene, tinplate, plastic film, card and magnetic rubber sheet

Classification: 1.3 Miscellaneous put-together/PAT.EDGE



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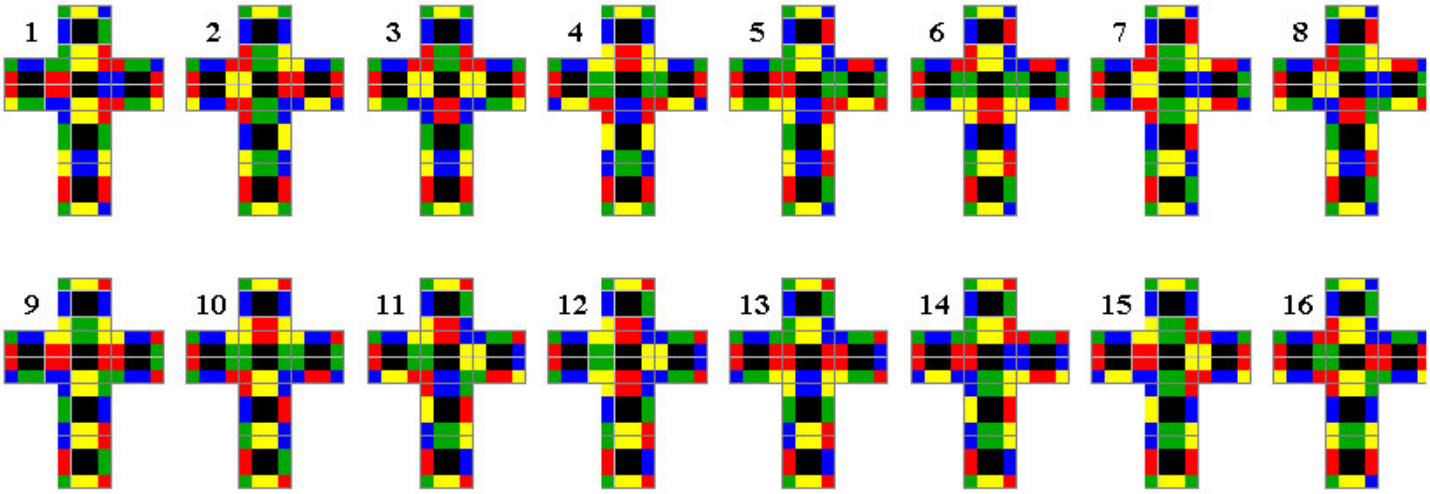
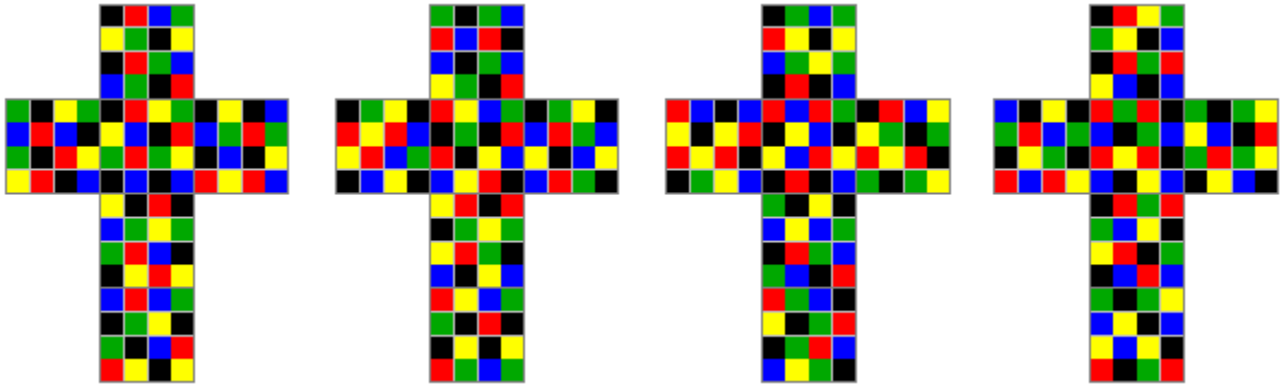
11 Colour Cube

Puzzle Solution:

16 solutions to edge-matching puzzle:



Sample solutions to anti-matching puzzle:



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12

Cross View

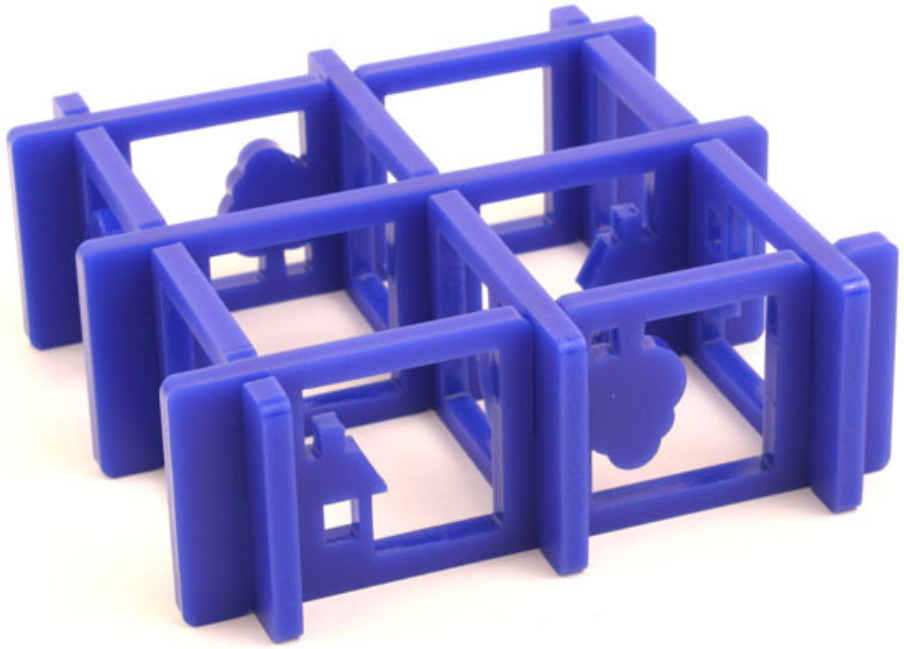
Puzzle Goal:

1. Put together the pieces into a lattice. (3 pieces will intersect the other 3 pieces at right angles.)

2. Put together the pieces into a lattice so that a tree and a house will appear in each frame (two in each direction).

Materials: Acrylic plastic

Classification: Interlocking solid (3.4)



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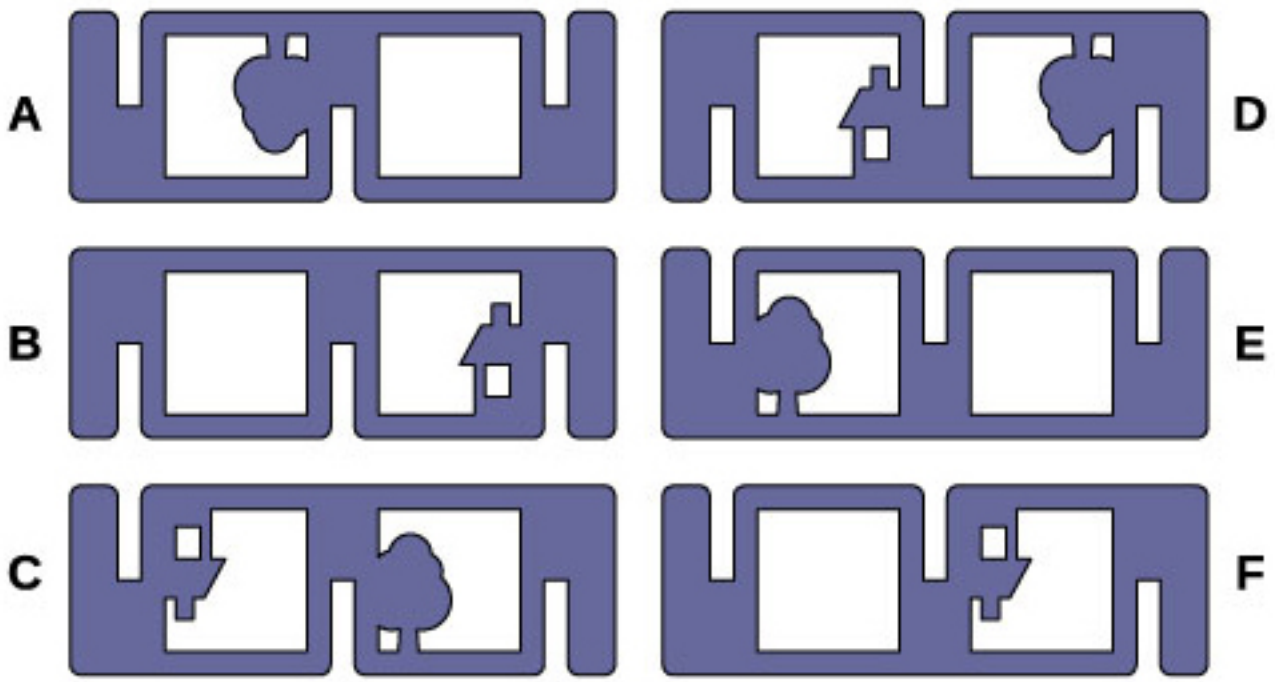
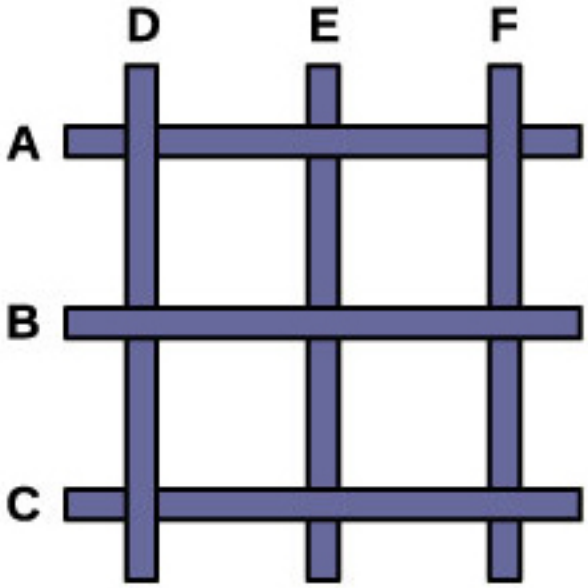
12 Cross View

Puzzle Solution:





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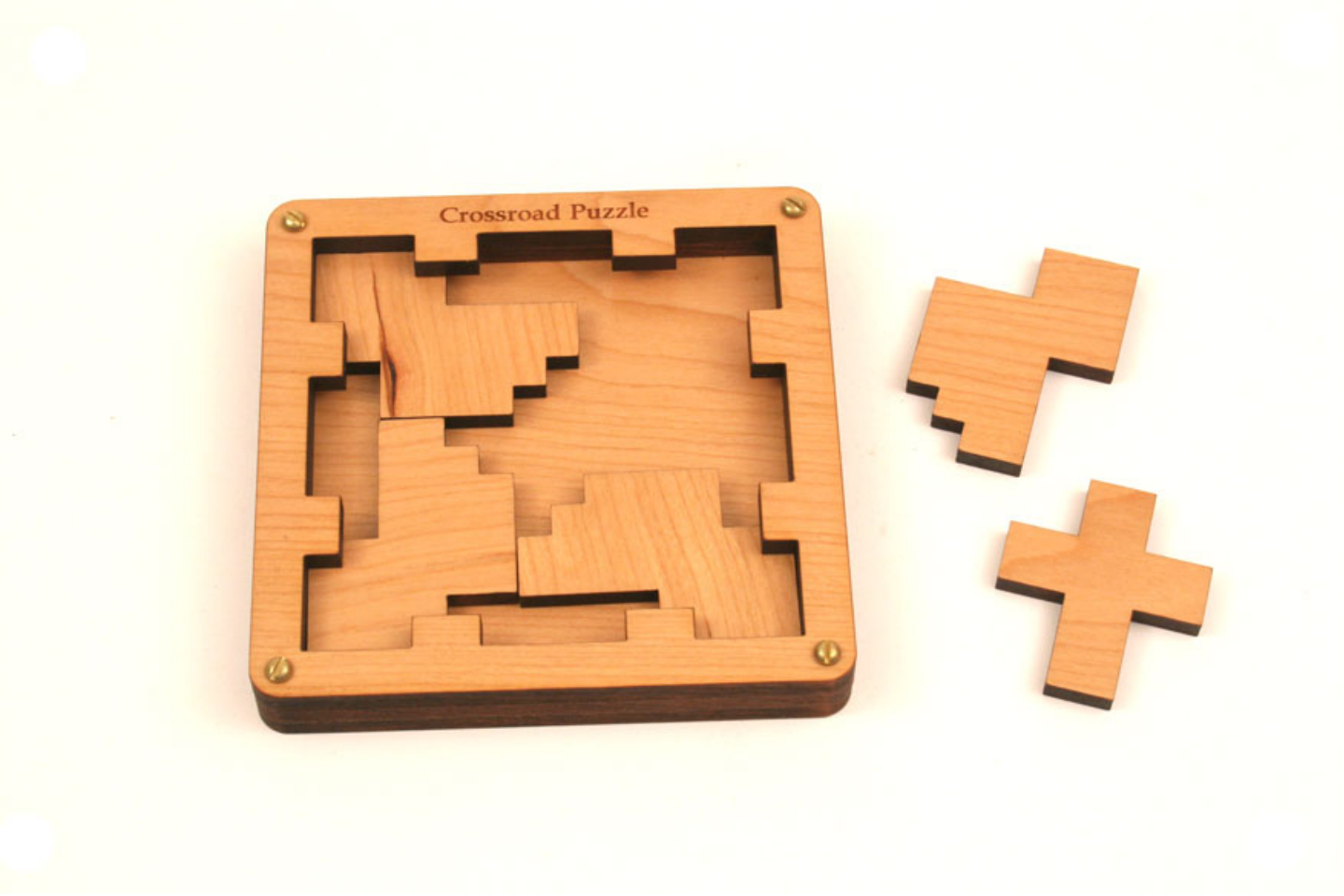
13

Crossroad

Puzzle Goal: **Place the five pieces flat onto the base of the tray.**

Materials: Cherry wood

Classification: Put-together



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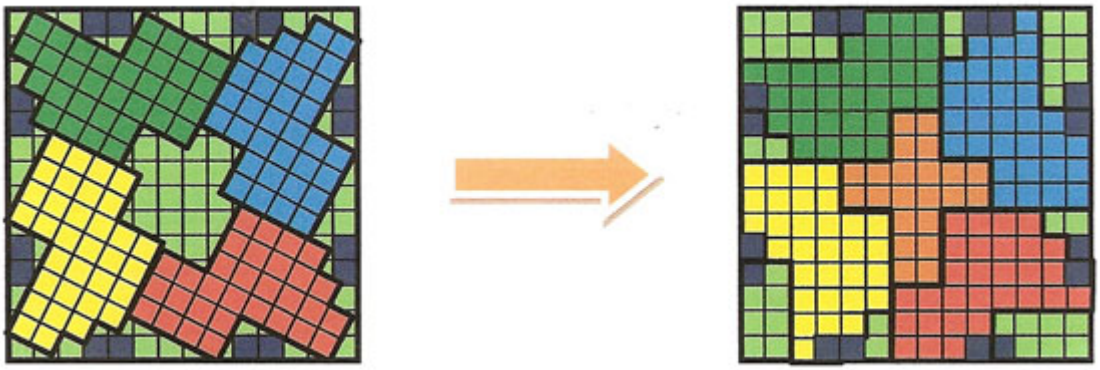
13 Crossroad

Puzzle Solution:



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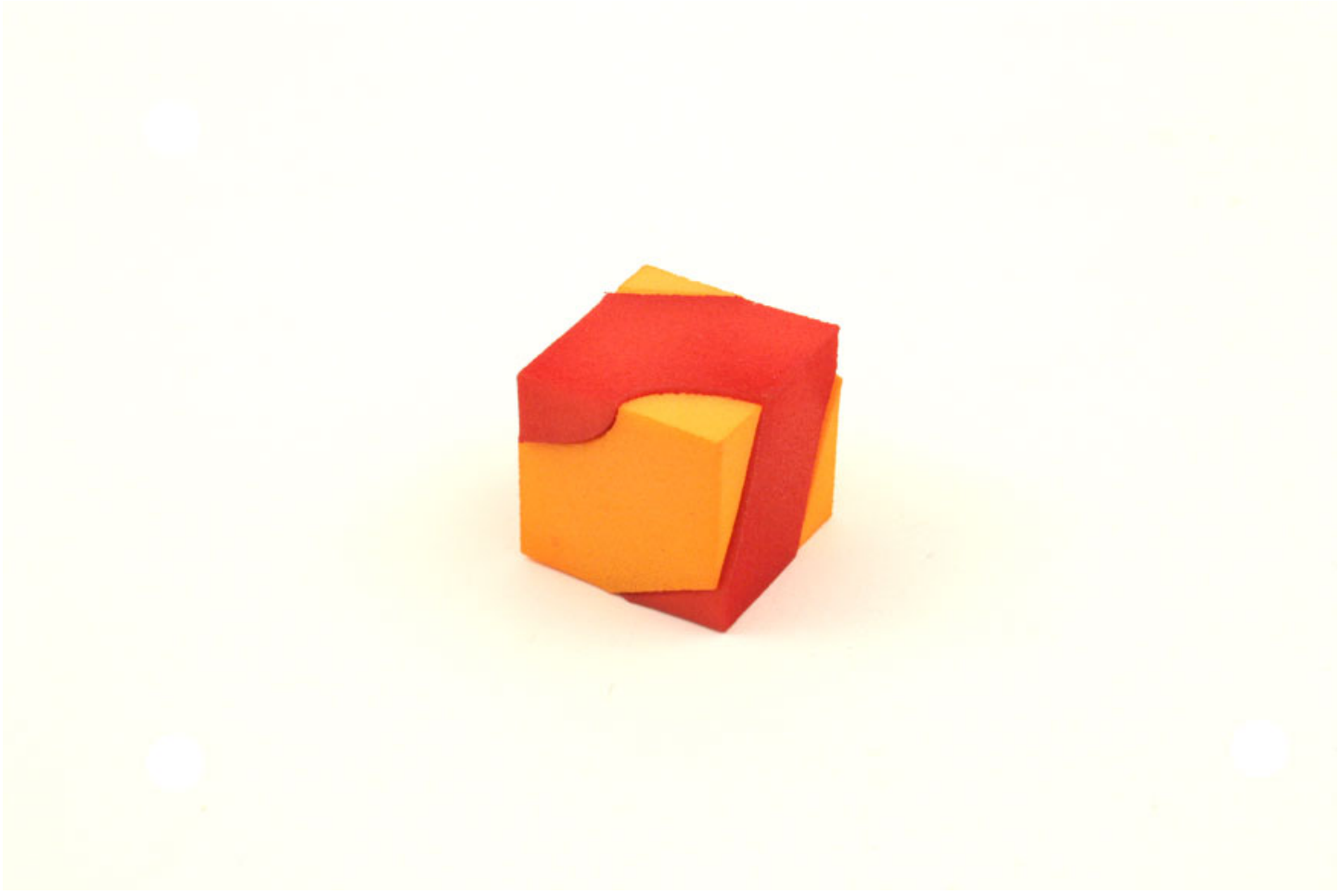
14

Cube Puzzle

Puzzle Goal: **Assemble the two pieces into a cube.**

Materials: Nylon, selective laser sintering

Classification: Geometric assembly, put-together



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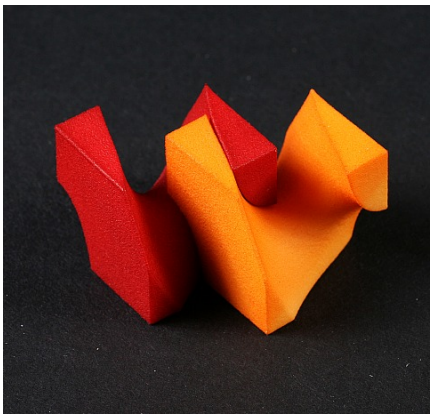
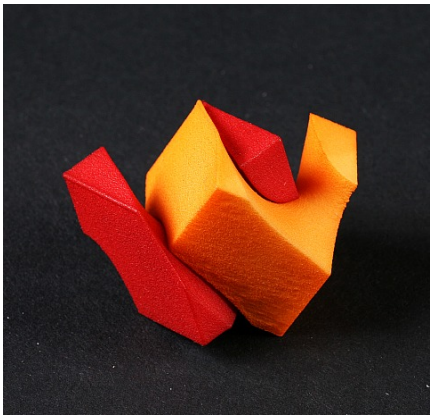
14 Cube Puzzle

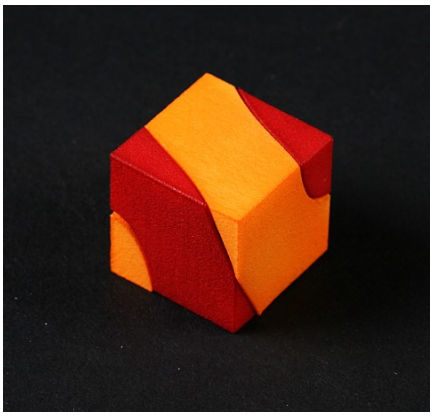
Puzzle Solution:

The puzzle can be seen as a cube sliced by the propeller of an airplane flying through it. Formally, it is a cube which has been split along a helicoid surface whose axis is aligned with a two-fold axis of the cube, i.e. passing from one edge midpoint to the opposite edge midpoint. The helicoid makes exactly one revolution between these edges. The form can also be understood as a mating nut and bolt, designed to be the same shape.

This is one instance within a large family of related screw dissections. One can choose the shape to be dissected, the axis to screw along, the pitch of the thread, the phase of the thread relative to the dissected object, the left/right handedness, the number of blades on the propeller, the angles between the propeller blades, and a parametric space curve for the shape of each propeller blade.







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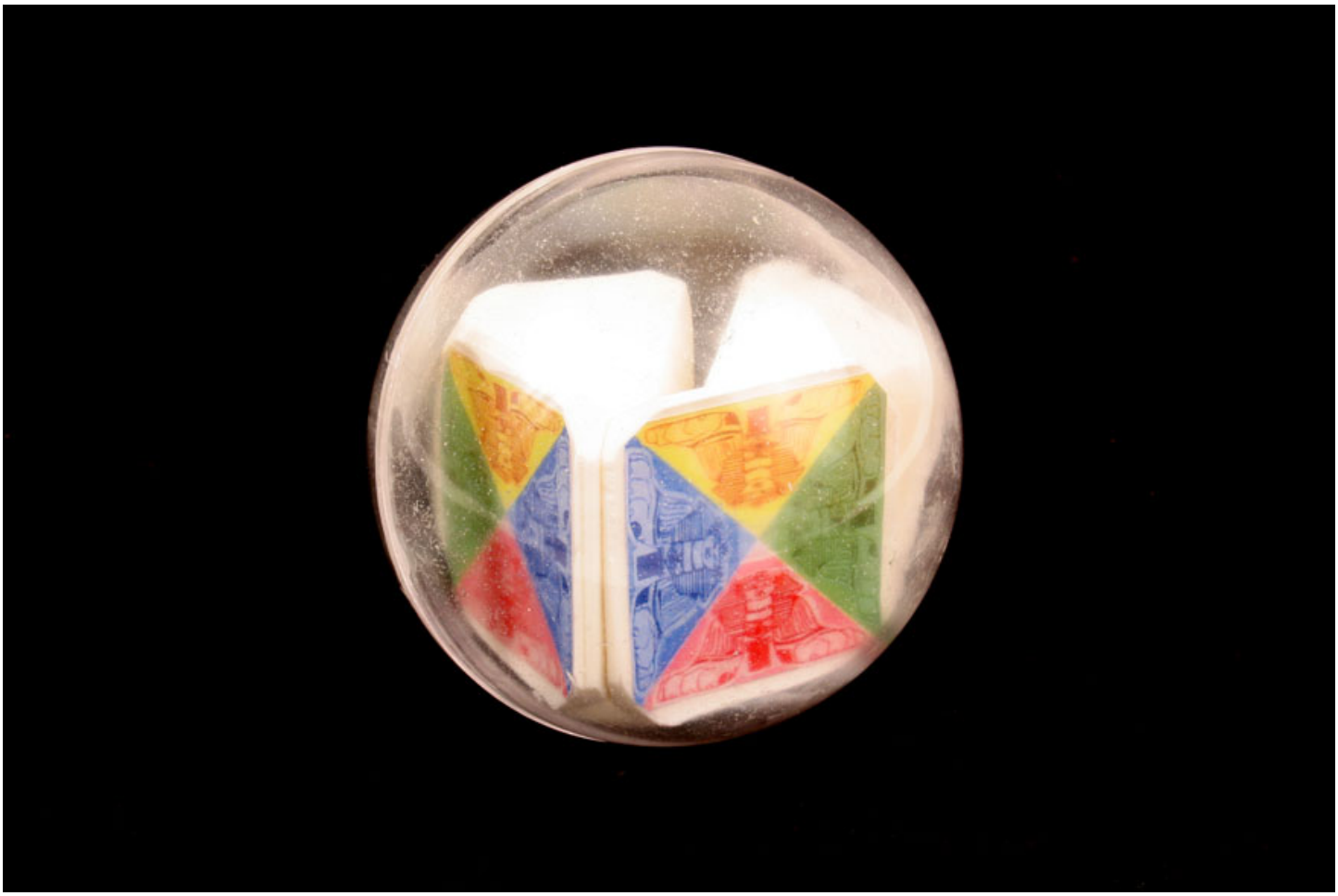
15

Cubedron

Puzzle Goal: **Arrange the five pyramids inside the sphere so that the colored edges match.**

Materials: Polyurethane pyramids with paper stickers, inside an acrylic sphere

Classification: Sequential movement



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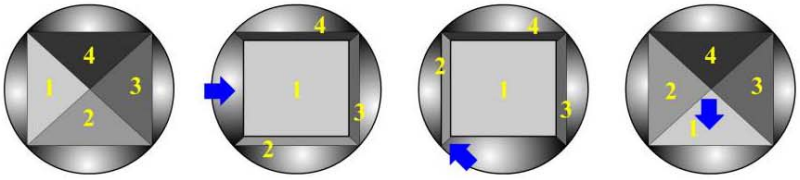
15 Cubedron

Puzzle Solution:

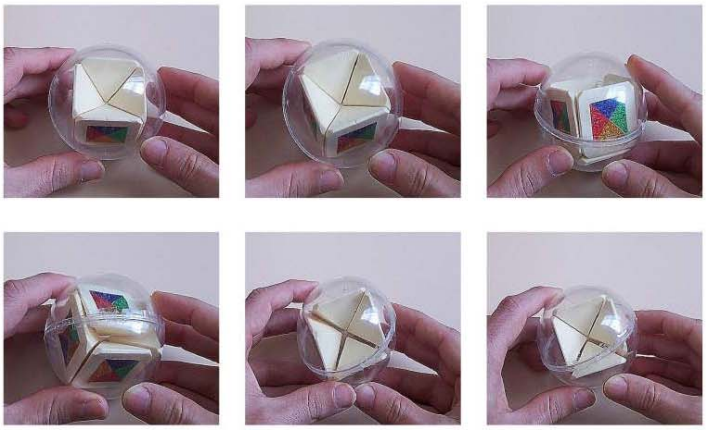


Assume that we are looking at the empty space, and that the empty space is on the top of the Cubedron. Then:
- Move pyramid Nr 1 towards the empty space
- Move pyramid Nr 2 towards the empty space (where pyramid Nr 1 used to be)
- Move pyramid Nr 1 towards the empty space (where pyramid Nr 2 used to be)

The above clockwise movement is denoted as A. The same movement, if done anticlockwise, is denoted as A'. Similarly, the clockwise movements between the pyramids 2&3, 3&4, and 4&1, are denoted as B, C, and D respectively (while B', C', and D' denote the anticlockwise movements).
EACH of the above moves, always ends up with the empty space on the TOP.
Simple rotations can achieve the correct placement and orientation.
For example, the sequence A swaps pyramids 1&2, while the sequence AA rotates clockwise both pyramids 1&2, while keeping them in the same position.
The sequences B, C, and D have similar properties.

To solve the Cubedron, first place the pyramid with clockwise sequence of colors red, yellow, blue, green to the bottom. This pyramid should always stay there!
After using A, B, C, D to easily place all pyramids in the correct position and have at least three pyramids with the correct orientation, three issues may occur:

Case 1: All pyramids have correct position and orientation. Puzzle is solved!!!
Case 2: All pyramids have correct position and orientation, except one which is rotated by 180 degrees. Then the sequence B C' D' C B A A A B' B' would rotate the front pyramid by 180 degrees.
Case 3: All pyramids have correct position and orientation, except one which is rotated by 90 degrees.
In this situation, no mathematical method can help to solve it. A special trick is required to lift this "curse". This is illustrated below.



1. Look at the puzzle's empty spot.
2. Turn the puzzle 30 degrees (clockwise or anticlockwise) with respect to you.
3. Start turning the entire Cubedron puzzle forward with respect to you.
4. In the next few moves, one pyramid is going to "overshoot", and will be rotated by 90 degrees with respect to the other pyramids. Well done!
After "lifting the curse", you may proceed to solve the puzzle mathematically.

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16

Cubicula

Puzzle Goal: **Make a cube, and other optional shapes.**

Materials: Plum and maple

Classification: interlocking

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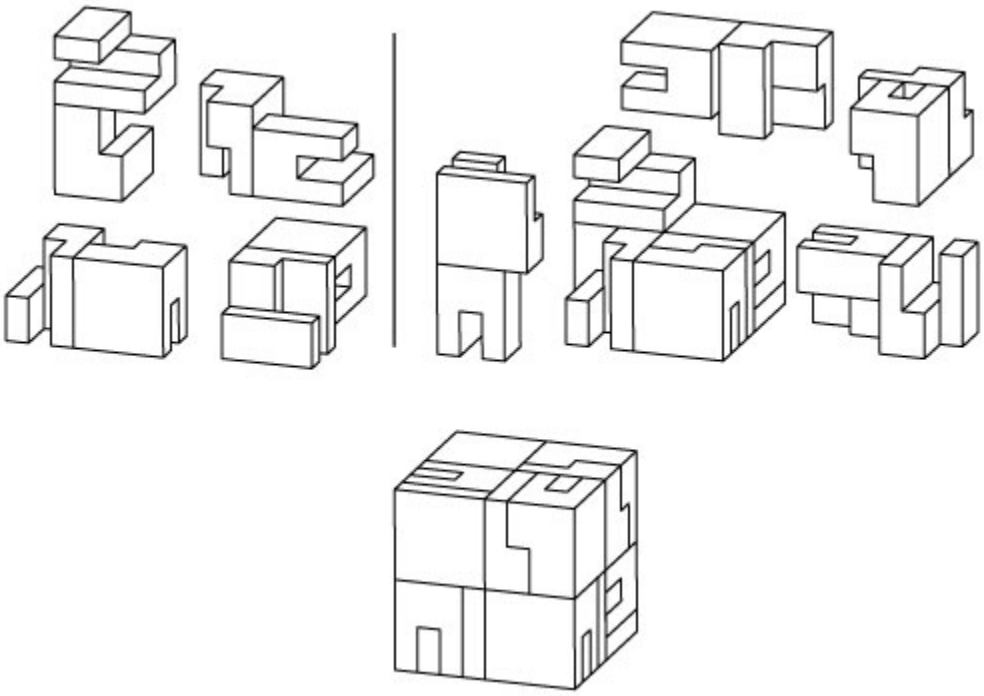
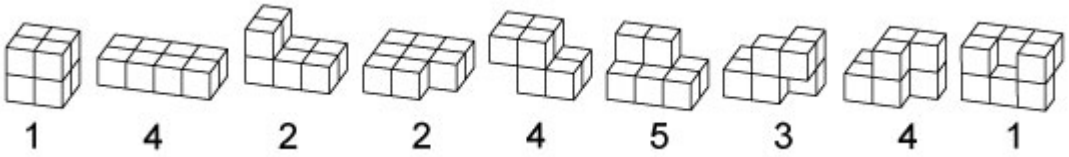
16 Cubicula

Puzzle Solution:



Alternate shapes:



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17

Dango Box

Puzzle Goal: **Place all of the nine pieces into the box and close the lid properly.**

Materials: Dogwood pieces; kiri box

Classification: 1.2 3-D Assembly

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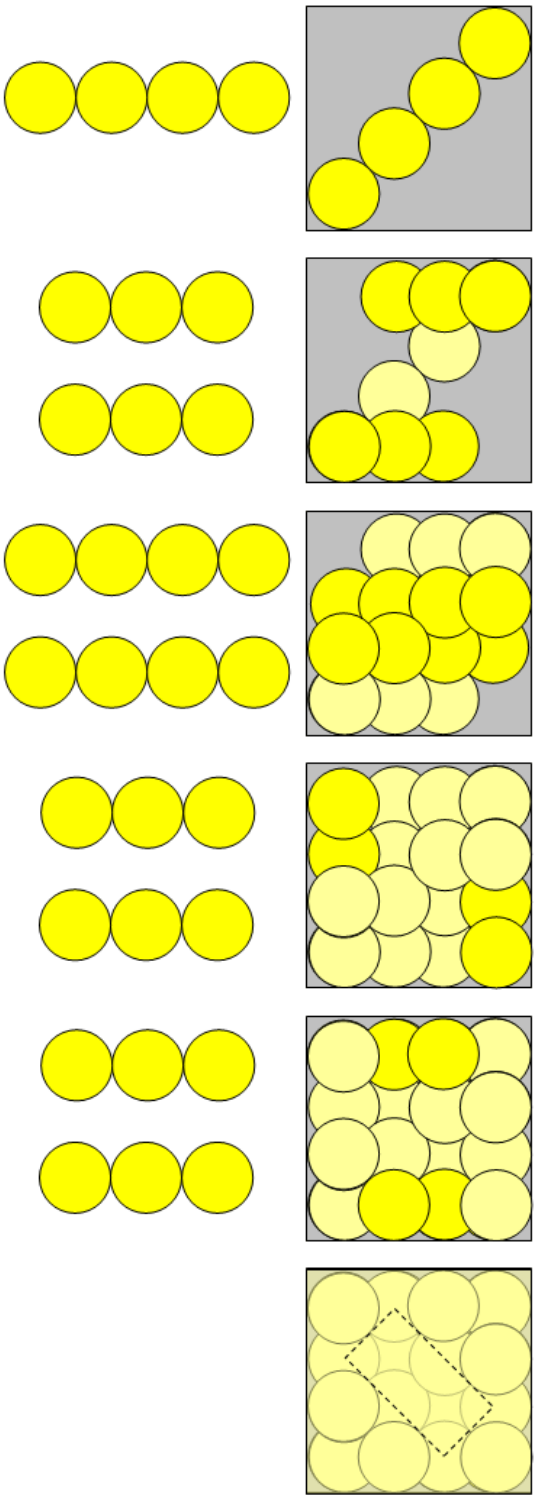
17 Dango Box

Puzzle Solution:

At the beginning, you must check in which orientation the lid will fit (see final diagram).



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18

Distorted Cogs

Puzzle Goal: **Put the 16 distorted cogs into either side of the frame.**

Materials: Rosewood, MDF

Classification: Put-together

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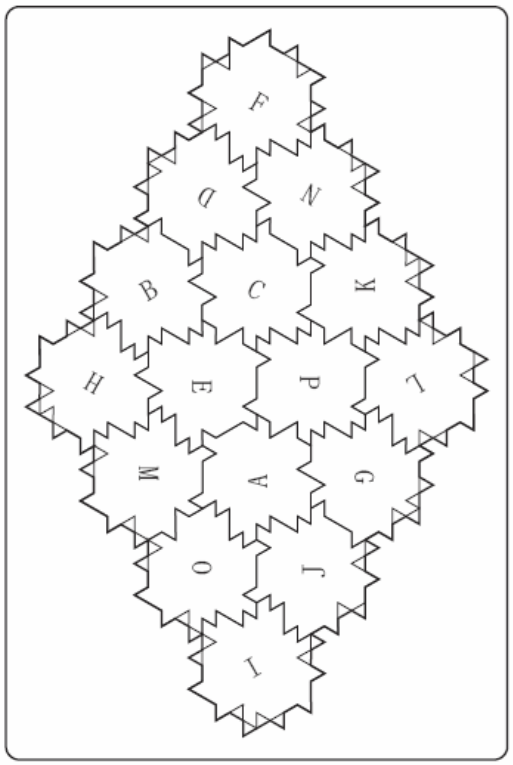
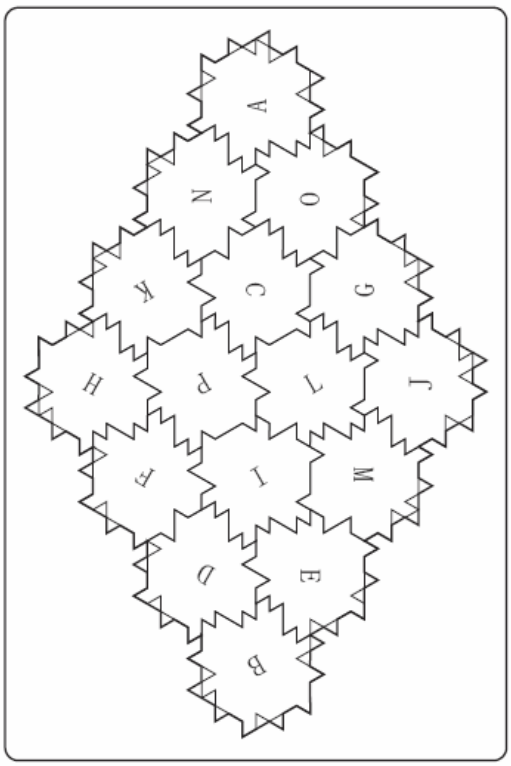
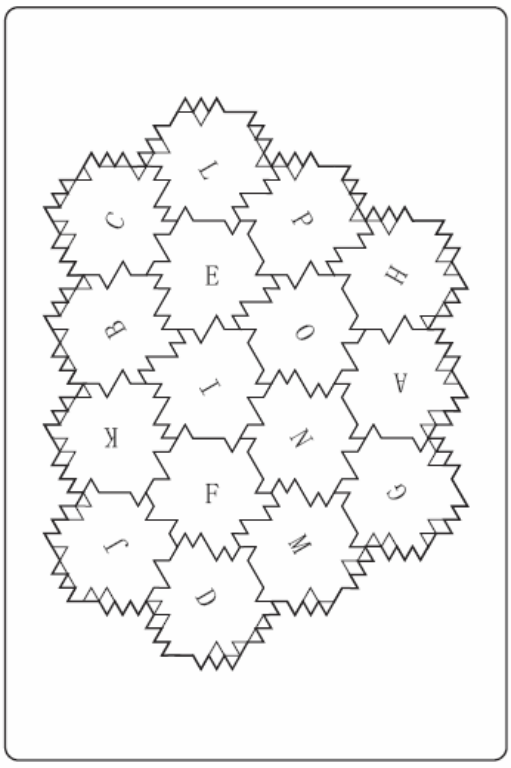
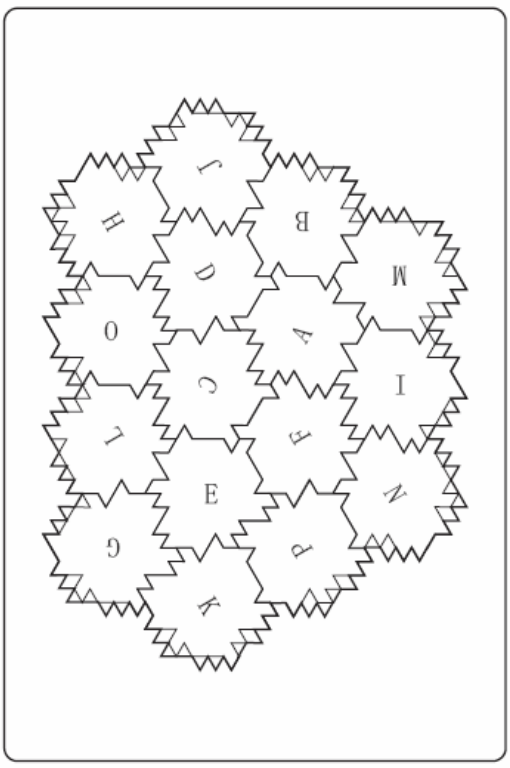
18 Distorted Cogs

Puzzle Solution:









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19

Easy Eight / Hard Eight

Puzzle Goal: **Fit the letters E I G H T into the square (easy), and then into the oval (hard).**

Materials: Walnut and cherry

Classification: Put-together

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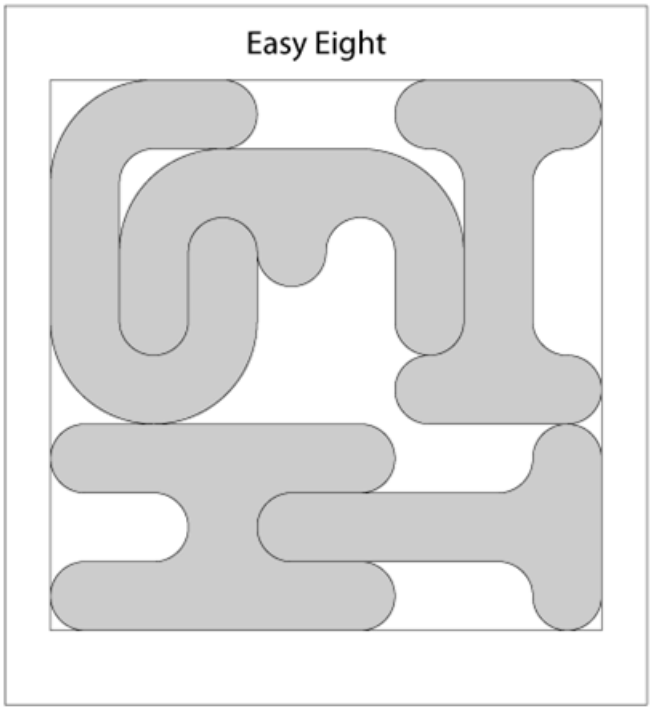
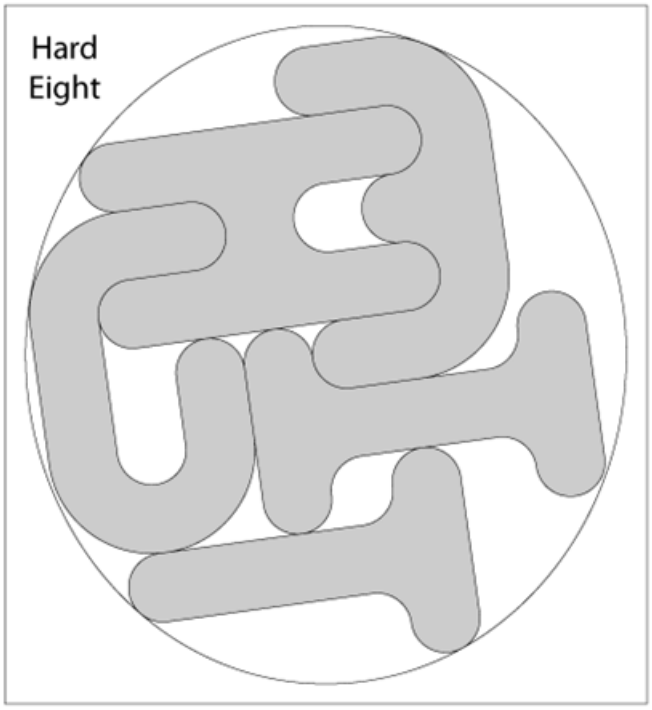
19 Easy Eight / Hard Eight

Puzzle Solution:





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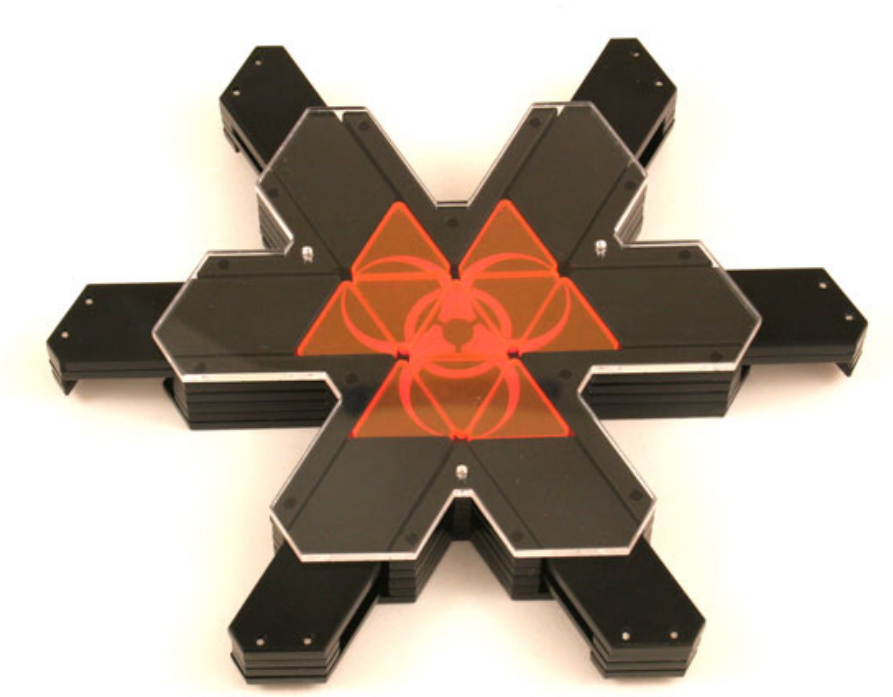
20

Elemental: Neon

Puzzle Goal: **Using the three plungers, shuffle the pieces and then restore the original pattern.**

Materials: 1/8" acrylic sheet

Classification: Sequential movement



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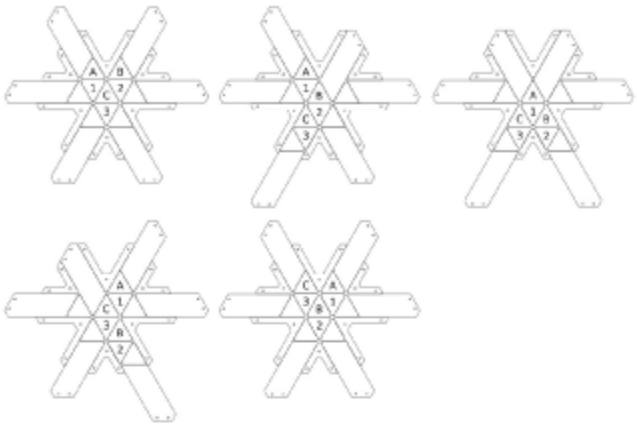
20 Elemental: Neon

Puzzle Solution:

Notation and primitive moves

This guide's notation for describing an Elemental:Neon solution is based on the fact that its moves fall naturally into sequences of four moves. The plunger ends of the puzzle block all other sequences such that after the first move the next three are determined. Moves that do not follow this pattern reverse the previous move or lead to blocked moves.



The basic primitive group of four moves is illustrated to the right.

This primitive can be reversed, and can be performed in any one of the three orientations of the puzzle (120 degree rotations). This defines a set of six primitives to move pieces. You will note from the diagrams above this primitive has two results: The group ABC is rotated clockwise, and the group 123 is also rotated clockwise. Doing the move in reverse will rotate these two groups counterclockwise.

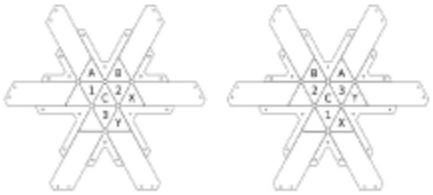
The notation for the primitive displayed in the above diagram is /\/\, where the '/' and '\' characters represent the plungers of matching the character's orientation. This primitive is comprised of four moves starting with the / plunger (down), followed by the \ plunger (down), the / plunger (up) and finally the \ plunger (up). The primitives always move down, down, up, up, and always alternate plungers. The reverse is primitive is noted: \/\/. Rotations of the puzzle are noted with: ---> for clockwise rotation (120 degrees) and: <--- for counterclockwise rotation (120 degrees)

Solution strategy

Because the Elemental:Neon has two independent groups (one with seven pieces and one with three) we use the above primitives to place the pieces of the seven piece group (the group containing ABC and four side pieces) first, and then use a sequence to rotate the three piece group (containing 123) that does not disturb the seven piece group. Moving pieces of the seven piece group is performed by moving a piece into the center position, at which point it can then be moved to any of the remaining six locations. To place the correct pieces in A and B, you will look to first place the piece destined for A into B's slot, and the piece destined for B in the center position (C). This way by rotating counterclockwise both pieces will be properly positioned in A and B. You can also do the reverse, placing the piece destined for B in A's location and the piece destined for A in the center

A slightly tricky situation is when A and B are swapped, in which case you need to move A to the center then out to the side which will allow you to rotate B into A's position without moving A. Now A can return to the center and then rotate them both into place: /\/\ ---> /\/\ <--- \/\/ ---> \/\/ <--- /\/\

Three piece solution without disturbing the solved seven piece group:



Consider the sequence above that swaps A and B. If we add a final: ---> /\/\, the center piece will be restored from the side, and we will find we have swapped A for B, but also swapped the two side pieces X and Y. In doing so, the three piece group has been rotated counterclockwise

Consider now applying this move twice. The AB and XY swaps will cancel out, and two counterclockwise rotations of the 123 group will equal a clockwise rotation of the 123 group. The final 123 group clockwise rotation move is:

/\/\ ---> /\/\ <--- \/\/ ---> \/\/ <--- /\/\ ---> /\/\ <--- /\/\ ---> /\/\ <--- \/\/ ---> \/\/ <--- /\/\ ---> /\/\ <---

This can be reversed to form a counterclockwise rotation of the 123 group:

\/\/ ---> \/\/ <--- /\/\ ---> /\/\ <--- \/\/ ---> \/\/ <--- \/\/ ---> \/\/ <--- /\/\ ---> /\/\ <--- \/\/ ---> \/\/ <---

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21

Flag It

Puzzle Goal:

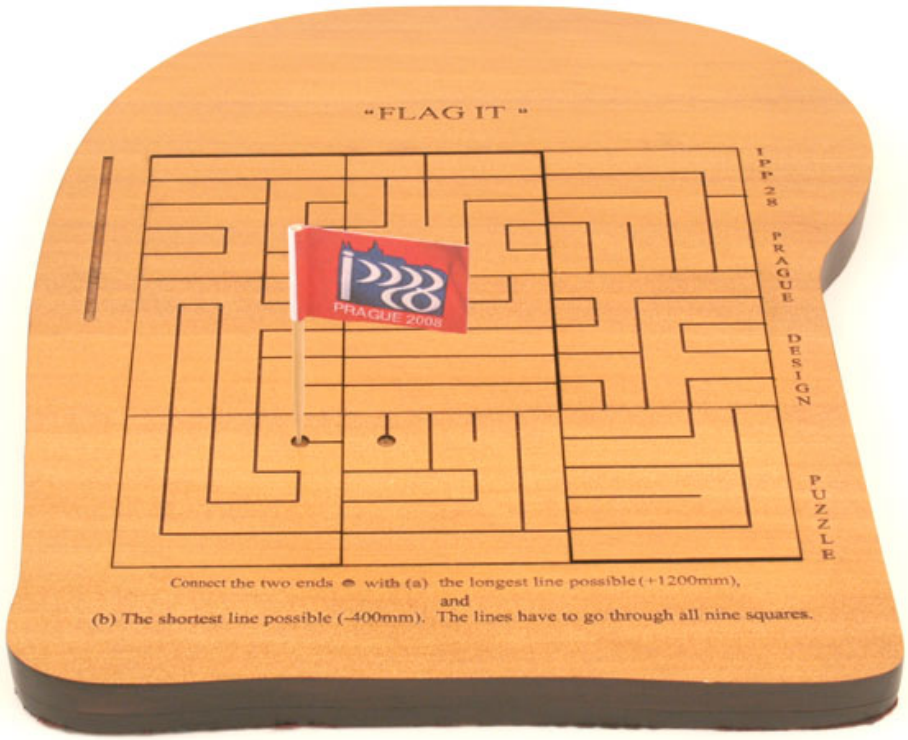
1. Connect the two ends (shown with large dots and hole) with the longest path possible (>120 units).

2. Connect the two ends with the shortest line possible (<30 units).

The path must go through all nine squares. The flag can be inserted in one of the starting positions, or the end can be used to trace your way through the puzzle.

Materials: NZ Kauri

Classification: Route finding



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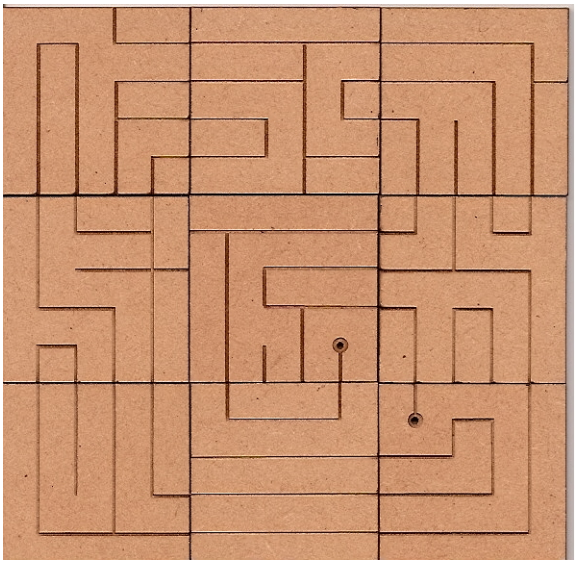
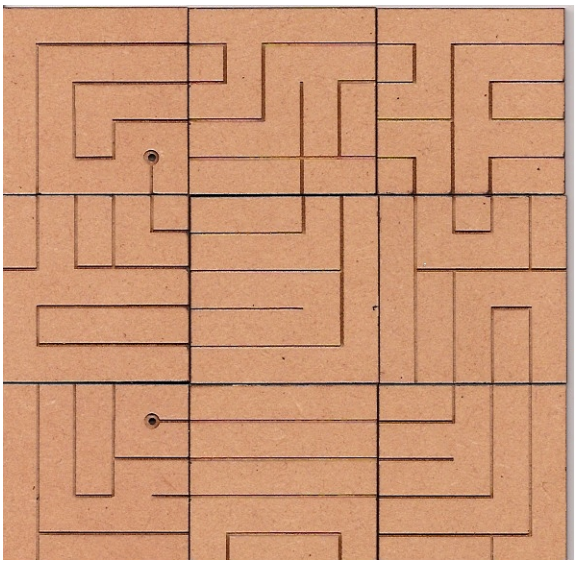
21 Flag It

Puzzle Solution:

The longest known path is 117 units:



The shortest path is 27 units:



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22 Gold Coast Parking Meter

Puzzle Goal: **Insert the 10c coin inside the fully constructed parking meter. No external tools are necessary, although you will have to find tools within, and determine how to use them.**

Materials: Yellow leichhardt, and Mackay cedar

Classification: 2.1 Take-apart puzzle

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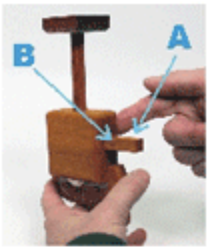
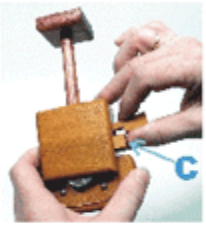
22 Gold Coast Parking Meter

Puzzle Solution:

- Turn the puzzle upside down
- Tap the back of the puzzle and slide out piece A
- Turn piece A over; ensure piece B remains in place
- Slide piece A&B back into the body of the parking meter; ensure it's completely back inside
- Again, tap the back and at the same time move piece A back and forth slightly, a few times
- After a few taps you should be able to remove piece A again but piece B will be left inside the puzzle



- Slide piece A back into the puzzle 2/3 of it's length (only 1/3 left out of the puzzle) and it should drop down into a hole inside the body of the parking meter
- Lever up very lightly (too much pressure and you might break the piece); this small amount of pressure will allow you to move piece C out of the puzzle about 10mm
- Squeeze pieces A & C together and then you should be able to pull all three pieces out together



- Replace just piece A, with check-out facing up, back into the puzzle into it's original position
- Then lower it down onto the springs inside, pushing the springs down
- Then slide piece A towards the back of the puzzle (away from the coin) into the slot that piece C came out of
- Turn over piece C (check-out towards the coin) and replace in it's original slot; this will push piece A out of the puzzle; in the process this will allow piece C to slip over the top of the springs
- Replace piece B into piece A. With piece B facing up, put both back in the puzzle.
- Turn the puzzle right way up and the coin will now fall into the parking meter.

To reset the parking meter:

- Tip the parking meter upside down
- Slide all three pieces back out of the puzzle
- Replace just piece A, with check-out facing up, back into the puzzle into it's original position
- Then lower it down onto the springs inside, pushing the springs down
- Then slide piece A towards the back of the puzzle (away from the coin) into the slot that piece C came out of
- Turn over piece C (check-out away from the coin with the beveled edges down - VERY important) and replace in it's original slot; this will push piece A out of the puzzle; in the process will allow piece C to slip over the top of the springs
- Replace piece B into piece A. With piece B facing up, put both back in the puzzle.
- Turn it back up the right way and it's reset. The coin should not fall down inside.

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23

Gravity Cube

Puzzle Goal: **Disassemble the pieces of the cube. Nine moves are needed to remove the first piece, but none of the pieces are moving!**

Materials: Olive, zebrawood, bubinga, and modenia

Classification: Take apart

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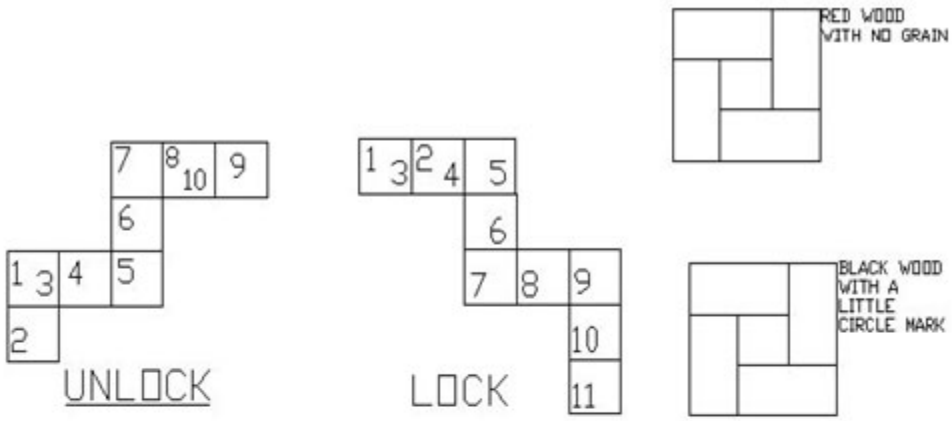
23 Gravity Cube

Puzzle Solution:

The entire mechanism is in one simple cubic block that has nine pins inside, placed in such way that depending the cube positions the rods fall one in front of the other.



- At the last move, press the center and if everything is done correctly, the center cube should pop out.
- Pull it out and the rest is easy. Be careful not to lose the little pin which locks the cube.
- You can arrange the cube again, but this time don't put in the piece without the hole.
- Make the same moves to lock it; now you can see and hear how the locking pins are moving and locking each other.

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24

Great Balls of Fire!

Puzzle Goal: **Open each of the balls, and the figures found inside.**

The real reason why God gave you two hands and five fingers each…

Materials: Various woods

Classification: 2.1

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24 Great Balls of Fire!

Puzzle Solution:

…to open the spherical truncated icosahedron and spherical truncated triacontahedron!

1. Press the balls and look for a crack.

2. Place five fingers on one half, then the other five fingers on the other half.

3. Press and pull chest high; no force needed! Voilà!

4. Out pops a smaller icosahedron and a triacontahedron box, from which these spheres originate from.

They open too--Box in a Box! Rather fragile and again no force: a three finger twist for the icosahedron, and five fingers for the triacontahedron (or chinnyhedron box).

5 .To close, you MUST MATCH THE RED DOTS on both halves of the STT or chinnyhedron box.

Both balls looks similar but yet different. The Soccer ball has 12 pentagons and 20 hexagons; the STT 12 pentagons and 30 hexagons. Now look closely at the smaller boxes. They are related. The long diagonals of the triacontahedron form the icosahedron…wow! Also, if you draw lines on the centre points of the icosahedron, it becomes a regular dodecahedron, which is also the structure formed from the short diagonals of the triacontahedron! Wow again!

These are the "Mother of All Balls" because the hexagons are made with five pines: (Baltic, huon, celery top, white cypress, and bird's eye radiate) that do not repeat their adjacent pieces. The pentagons are either hairy oak or tiger myrtle.

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25

Handcuffs Puzzle

Puzzle Goal: **Disentangle the two pieces.**

Materials: Steel wire

Classification: Disentanglement puzzle

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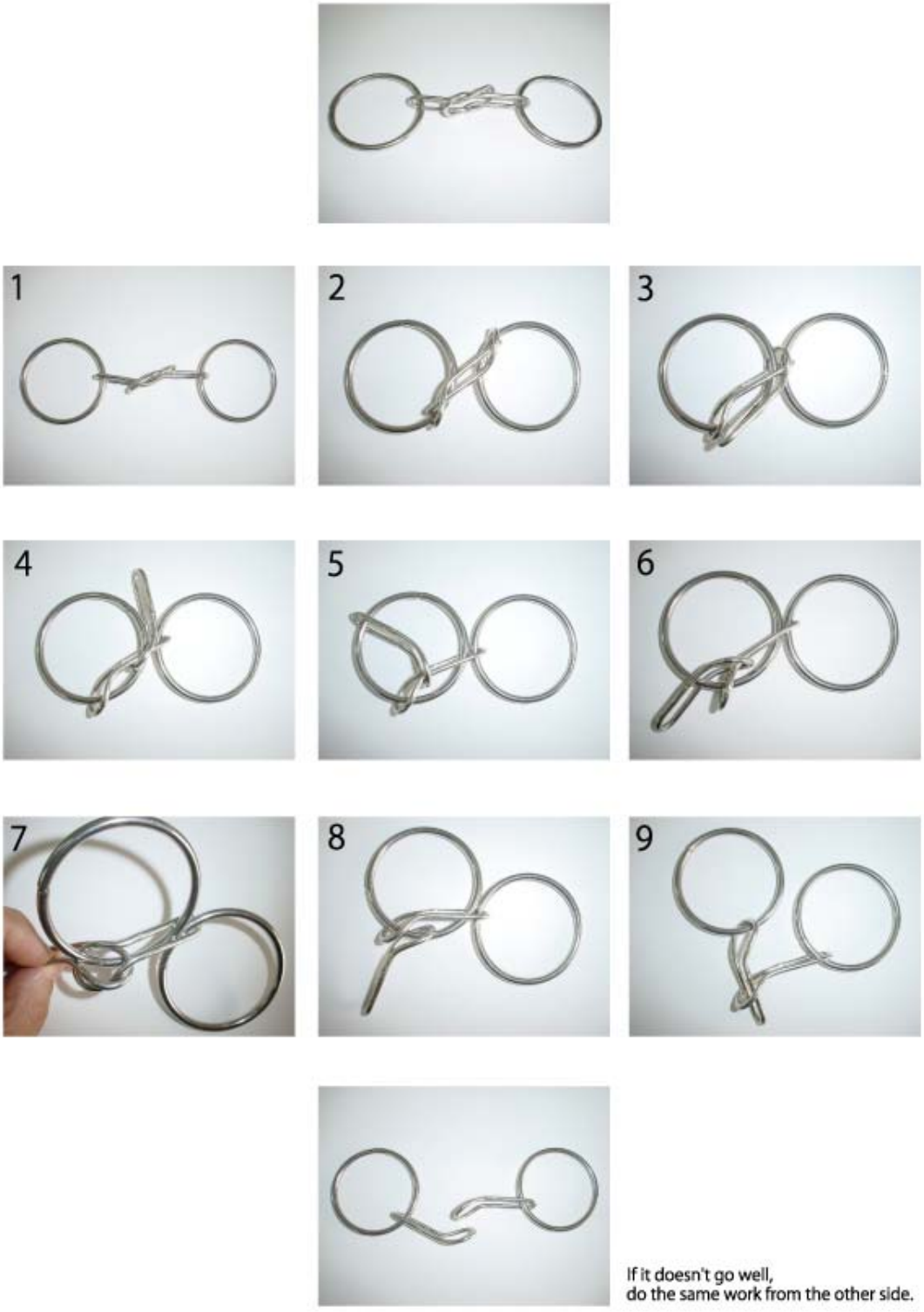
25 Handcuffs Puzzle

Puzzle Solution:



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26

Heavy Headed Burr

Puzzle Goal: **Disassemble and reassemble the 12-piece burr.**

Materials: Oak, rosewood and zelkova

Classification: Interlocking

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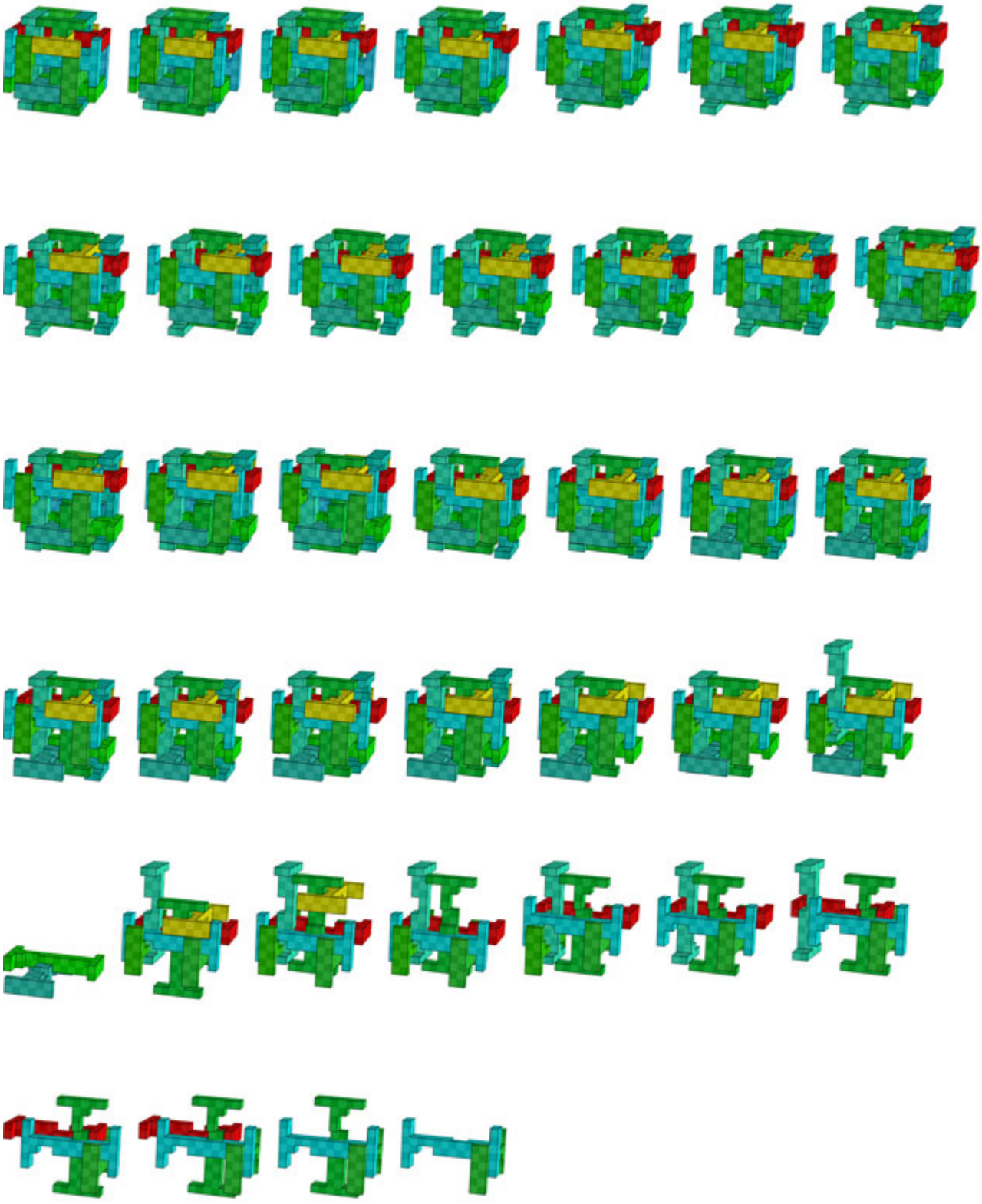
26 Heavy Headed Burr

Puzzle Solution:



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27

Ice-Bucket

Puzzle Goal: **Open the lid of the bucket.**

Materials: 360 Brass

Classification: OPN-BOX

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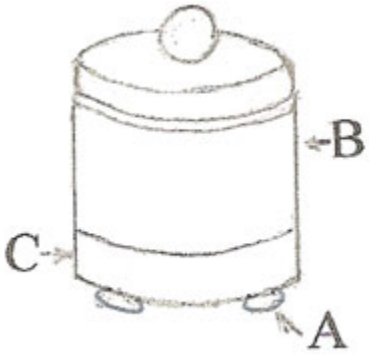
27 Ice-Bucket

Puzzle Solution:

- Hold Ice-Bucket upright. Pull leg A, the one that will pull.
- Turn base C clockwise while holding body B. Leg will stay out, turn till a pin drops.
- Lid will swing open.

To close hold Bucket upside-down so pin will drop in lid. Turn base till leg pops back in. Ice-Bucket is now locked.



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28 Icosian Alchemy

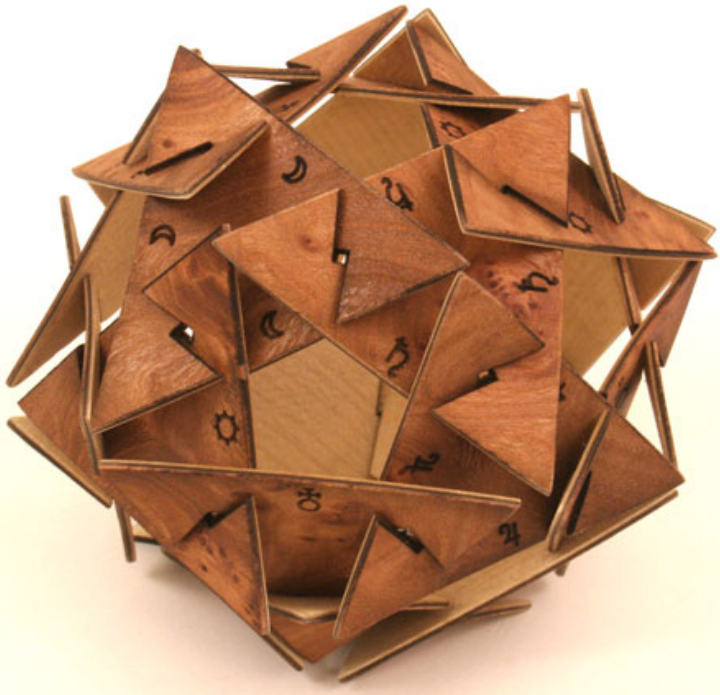
Puzzle Goal:

1. Take apart and re-assemble with the maple on the outside (easier).

2. Re-assemble with the dark side out and make sure that there are five different alchemic symbols at each pentagon.

Materials: Carpathian elm burr and maple

Classification: INT-POLY - Interlocking polyhedral



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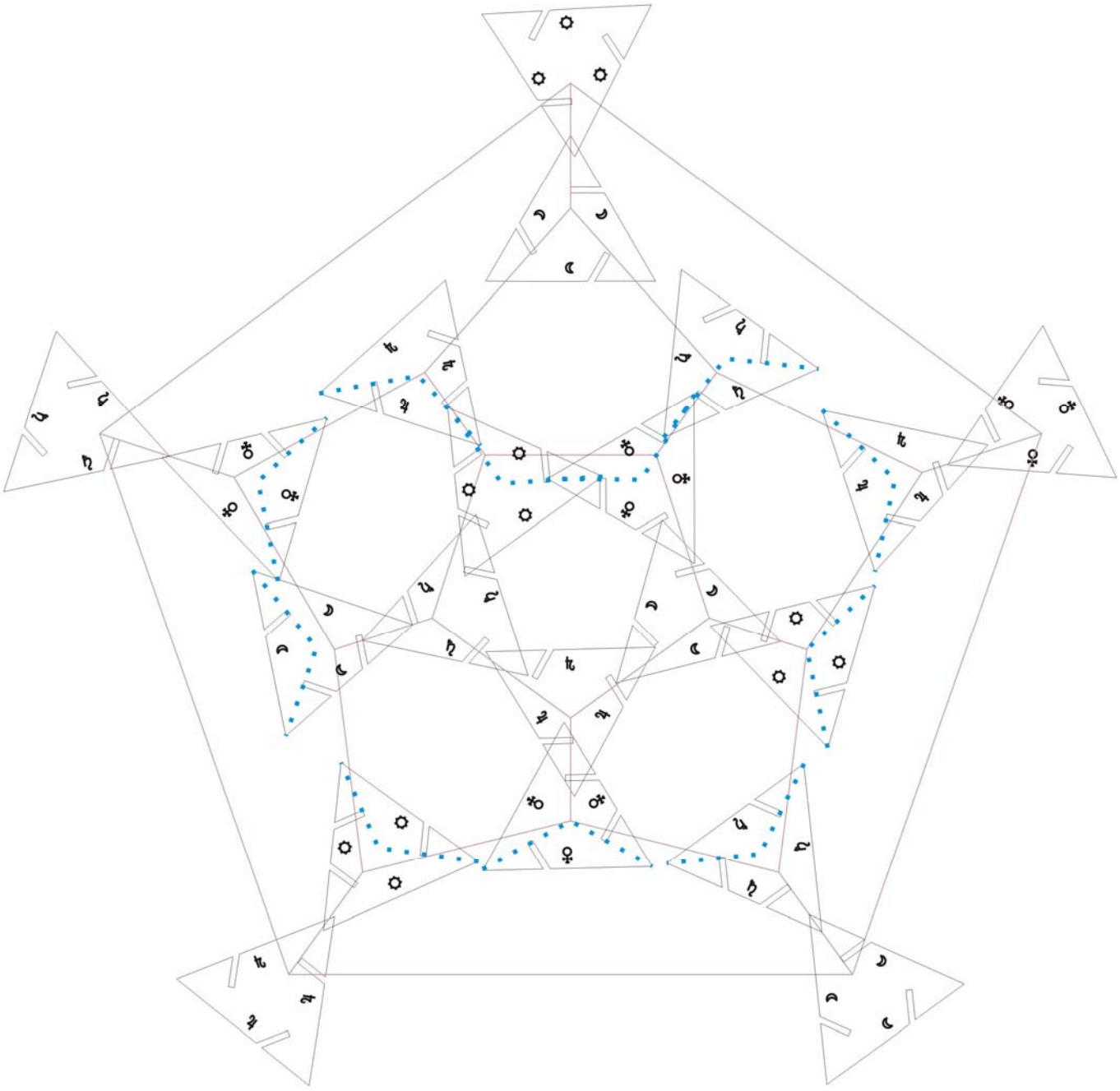
28 Icosian Alchemy

Puzzle Solution:



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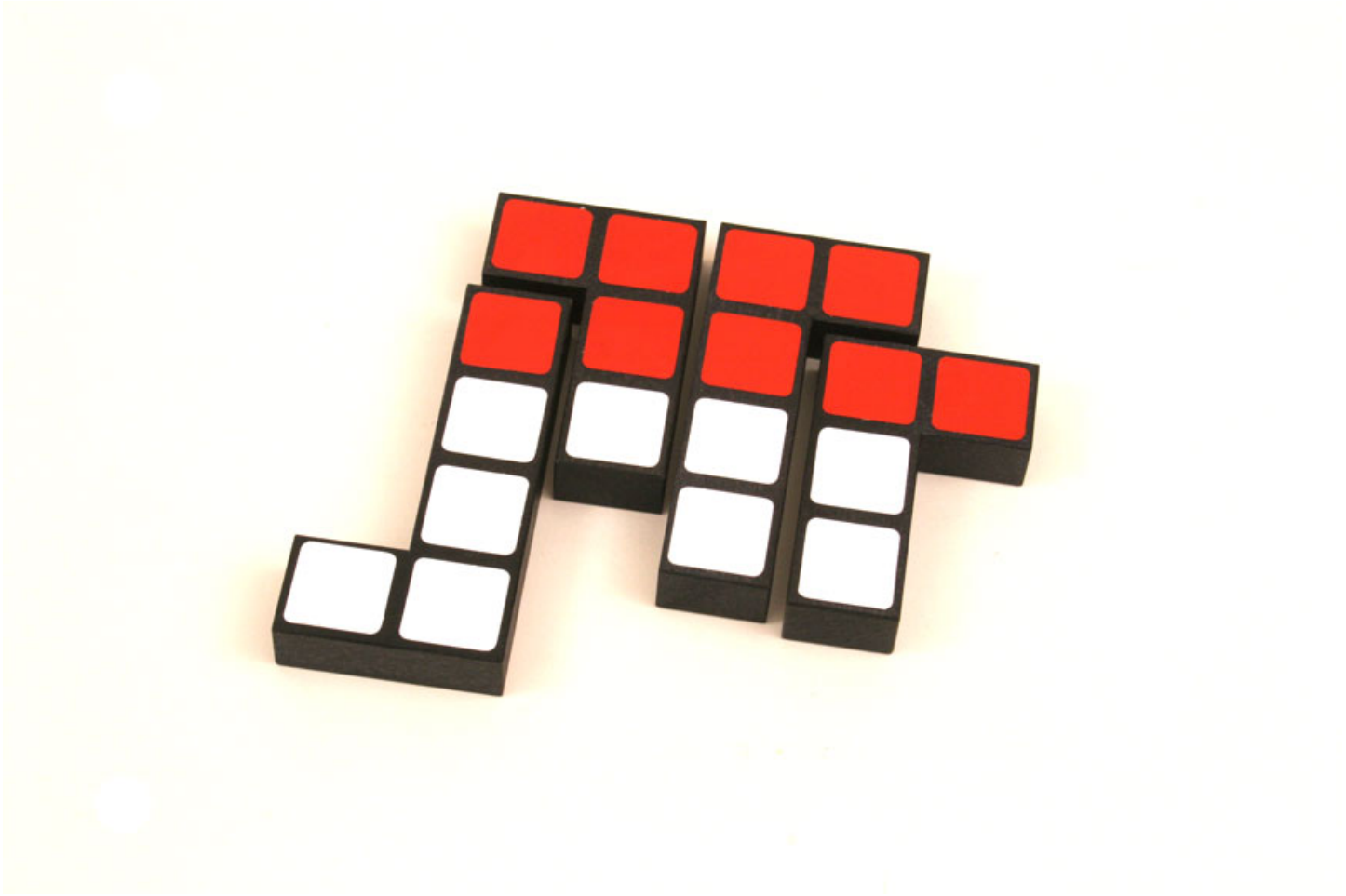
29

identica-L episode 0

Puzzle Goal: **Arrange the four L-shaped pieces so that two identical 9-ominoes appear at the same time (one is red and the other is white). Shapes may be rotated and/or reflected.**

Materials: Wood

Classification: 1.1 2-Dimensional assembly



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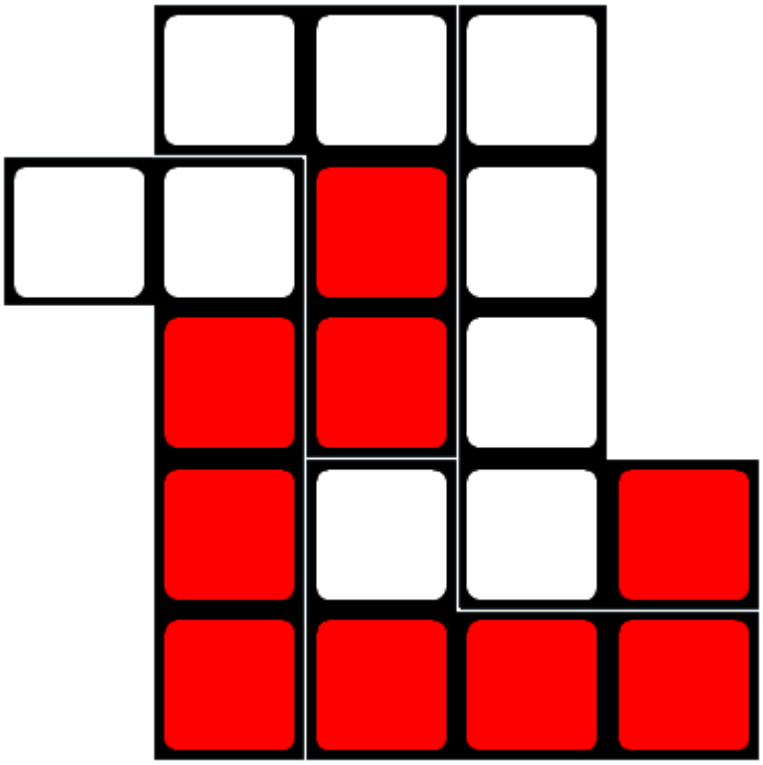
29 identica-L episode 0

Puzzle Solution:



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30

Iris Diamond

Puzzle Goal: **The puzzle consists of two pieces, each made of two triangular tiles. Each tile is divided into nine small triangles. Assemble the two pieces to form either a tetrahedron or a half-octahedron such that no triangle shares a corner or an edge with a triangle of the same color.**

Materials: Acrylic and paper tiles, fishing line

Classification: Put-together

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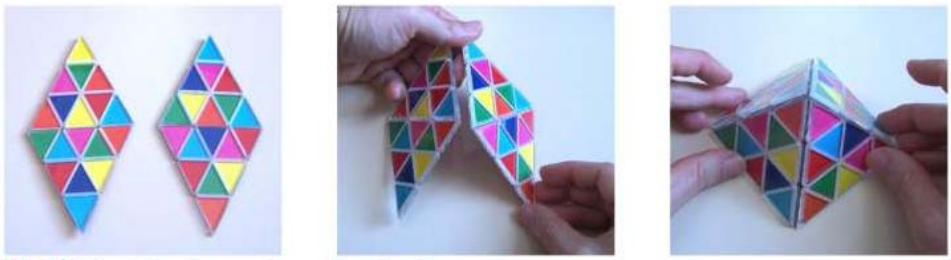
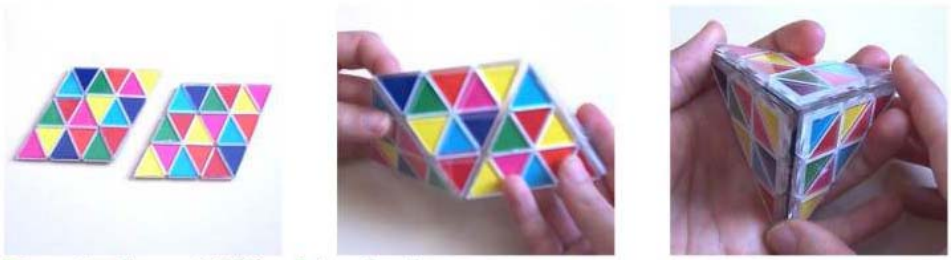
30 Iris Diamond

Puzzle Solution:

The photos above show how one of the big triangles may move around all the three sides of the other big triangle. The movement is based on a new stable stringing technique which allows ANY regular polygons to change sides.
Note: After one round, the puzzle should move in the opposite direction.
TO AVOID BREAKING THE STRINGS, DO NOT FORCE IT !



The Half-Octahedron (easy) solution:
Bring the two pieces in the form as shown in the first picture above.
The solved form of the half-octahedron as shown in the next two pictures.



The Tetrahedron (difficult) solution:
Bring the two pieces in the form as shown in the first picture above.
The solved form of the tetrahedron as shown in the next two pictures.

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31

Irmo box

Puzzle Goal: **Remove the lid from the box.**

Materials: Padauk, quilted maple, aluminum, brass, steel, acrylic

Classification: 2.1 Trick or secret opening box

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31 Irmo box

Puzzle Solution:

A mechanical latching mechanism disengages when the box is twisted quickly along its vertical axis, and opposing magnets are placed to make the top spring up (and also to prevent the lid from falling to the ground if held upside-down when opened). When the lid is put back in the box, it automatically locks.

When the box quickly accelerates counter-clockwise or quickly decelerates clockwise, then the inertia of two counterweights will cause them to spin far enough relative to the box to release the two latches. So merely spinning the box does nothing—it's the rapid starting or stopping that does the trick.

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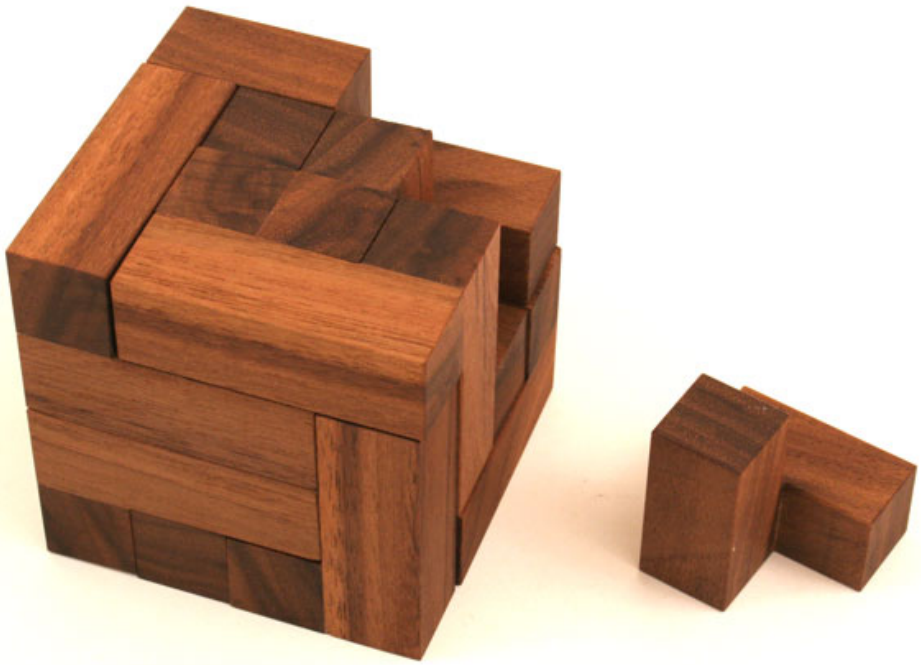
32

L Puzzle

Puzzle Goal: **Assemble a 4x4x4 cube, or any of the following shapes: 2x2x1, 2x2x2, 2x2x3, 2x2x4, 2x2x5, 2x2x6, 2x3x3, 2x3x4, 3x3x4, using any or all of the enclosed pieces.**

Materials: Padauk, steel pin

Classification: Put-together



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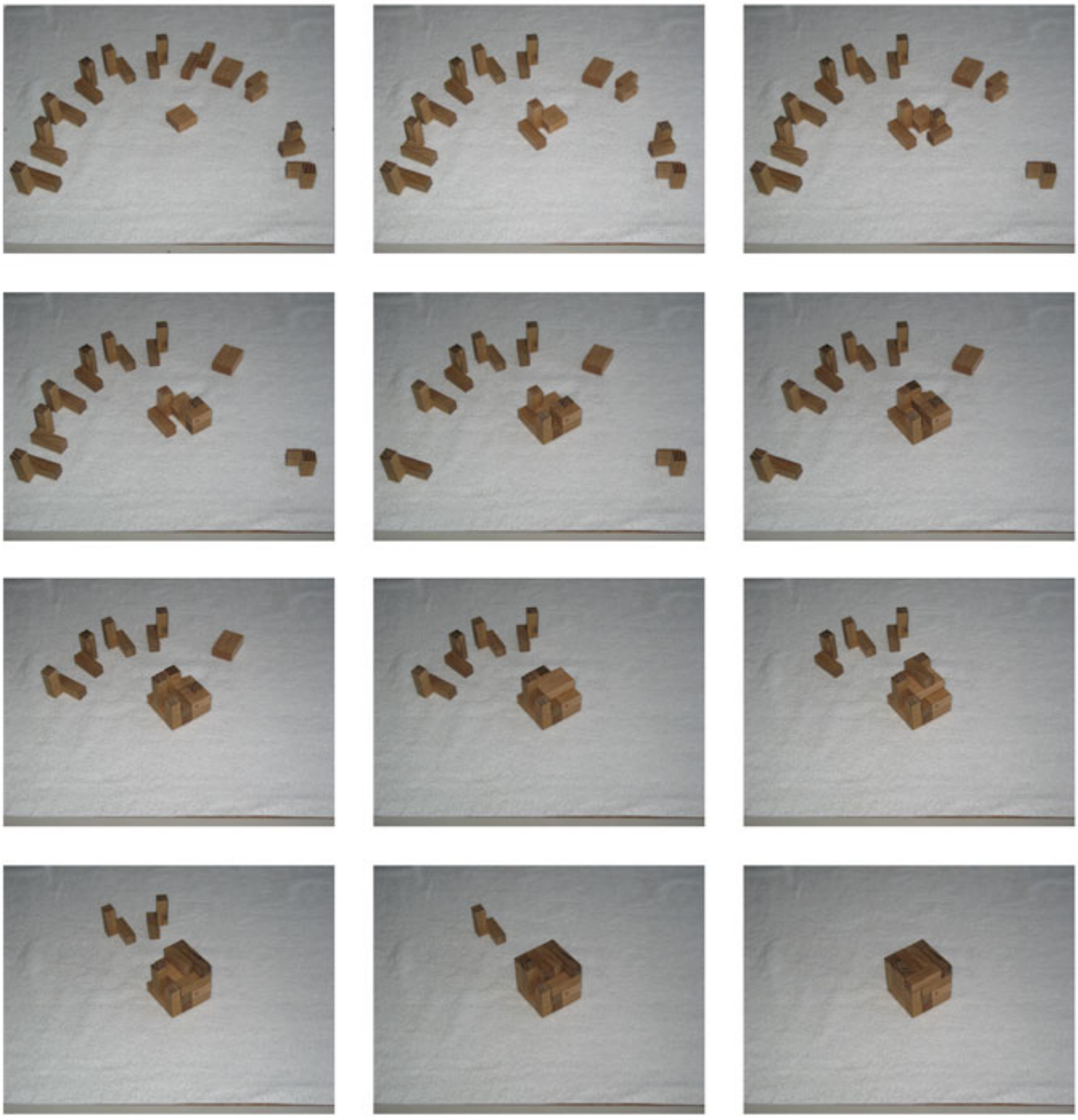
32

L Puzzle

Puzzle Solution:



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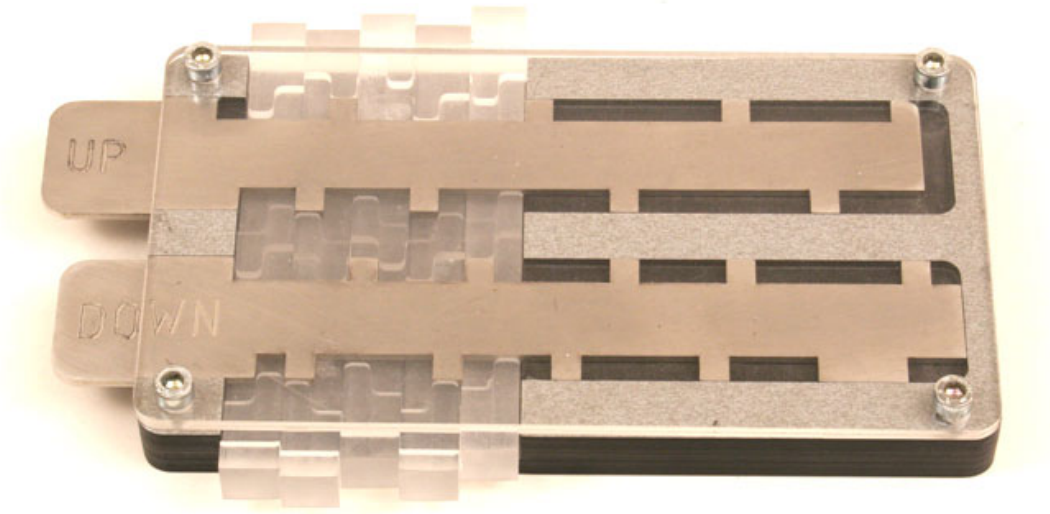
33 la cerradura doble

Puzzle Goal: **Remove the two keys.**

Materials: Trispan stainless steel polycarbonate

Classification: Sequential movement



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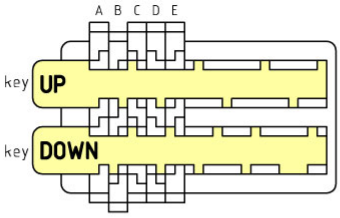
33

la cerradura doble

Puzzle Solution:

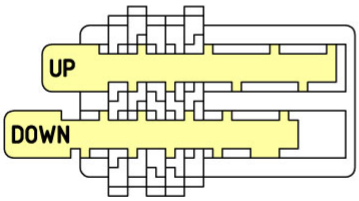
START solution la cerradura doble



u = UP d = DOWN

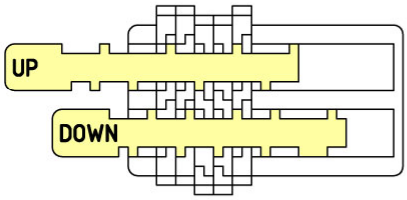
1. Ad Cd Dd
2. keyUP 1 left
3. Bu
4. keyUP 1 left Cu Du
5. keyDOWN 1left
6. Ed
7. keyDOWN 2left
8. Dd
9. keyUP 1 right
10. Au Eu
11. Bd
12. keyDOWN 2 left
13. Bu
14. Ad Cd

STEP 15 keyUP 2 left



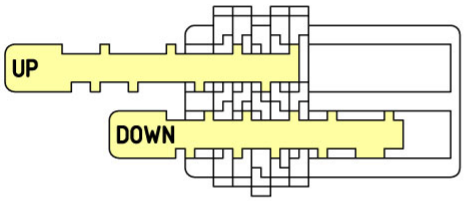
16. Au Du
17. Bd
18. keyUP 1 left
19. Cu
20. keyDOWN 2 right
21. Ed
22. keyUP 1left
23. Ad
24. keyUP 2 left
25. Au Eu
26. keyDown 2 left
27. Bu
28. Cd Dd
29. keyUP 3 left

STEP 30 Du



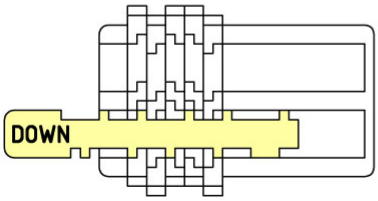
31. Bd
32. keyUP 1 left
33. Cu
34. keyDOWN 2 right
35. Ed
36. keyUP 1 left
37. Ad
38. keyUP 2left
39. Au Eu
40. keyDown 2 left
41. Bu
42. Cd Dd
43. keyUP 2 left
44. Du

STEP 45 keyUP 1 left



46. Bd
47. keyUP 1 left
48. Cu
49. keyUP 1 left
50. Ad
51. keyUP 2 left
52. Au Bu Cu
53. keyUP full out
54. Ad
55. keyDown 1 left
56. Cd Ed
57. keyDown 1 left
58. Au
59. Bd

STEP 60 keyDOWN 1 left



61. Eu
62. keyDOWN 1 left
63. Bu
64. Ad
65. keyDOWN 1 left
66. Ed
67. keyDOWN 2 left
68. Au
69. Bd
70. keyDown 2 left
71. Bu Cu Eu
72. Ad Cd
73. keyDOWN 2 left
74. Au
75. Bd
76. keyDOWN 4 left
77. Bu
78. keyDOWN full out

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34 Magic Smile

Puzzle Goal: **Each of the eight states of the puzzle shows one emotion (while the other side is scrambled): happy (solved state), sad, shy, tired, silly, sick, evil, and angry.**

The goal of this puzzle is to make Mr. Magic smile. Other challenges include to change Mr. Magic from happy to sad (and vice versa) using only three moves.

Materials: Acrylic and paper tiles, fishing line

Classification: Sequential movement

Notes: Although the mechanism has been done before, it is the first time such an efficient theme is used. Special creative artwork was designed to ensure a unique emotion for each position of the puzzle.

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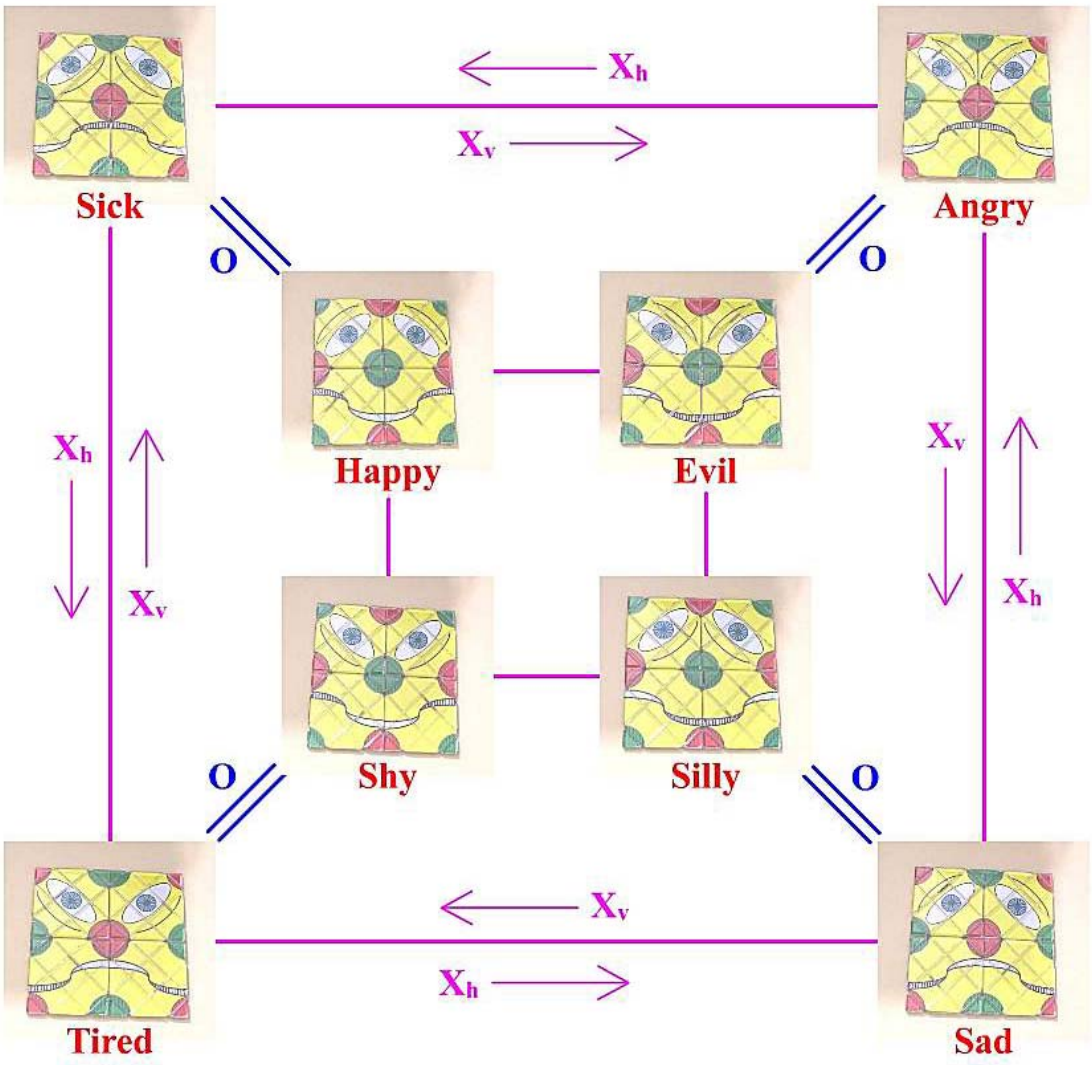
34 Magic Smile

Puzzle Solution:

This map shows how all the different emotions are connected with the vertical & horizontal star moves, and the loop move.



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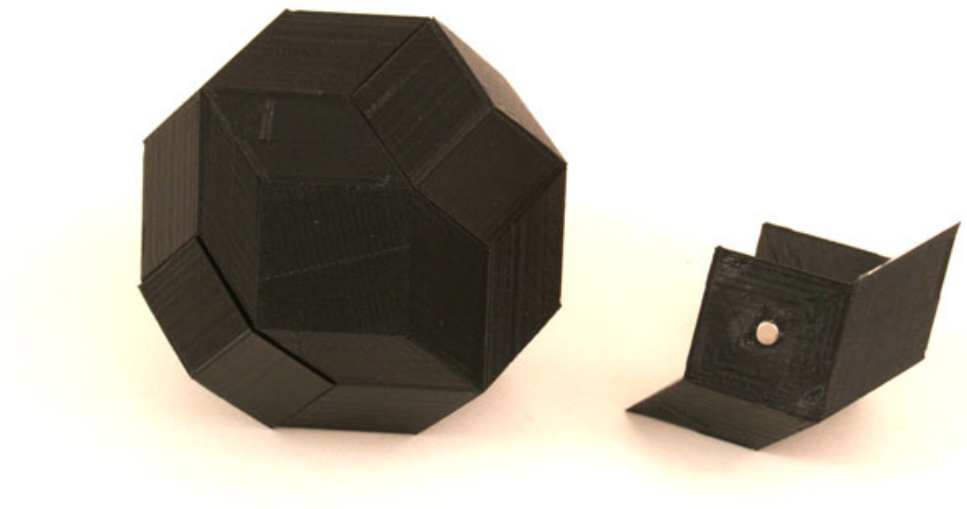
35

Martingar

Puzzle Goal: **Disassemble the four dodecahedrons and re-assemble into a truncated octahedron.**

Materials: Acrylic and ABS

Classification: Slocum 1.2 3-Dimensional assembly puzzle



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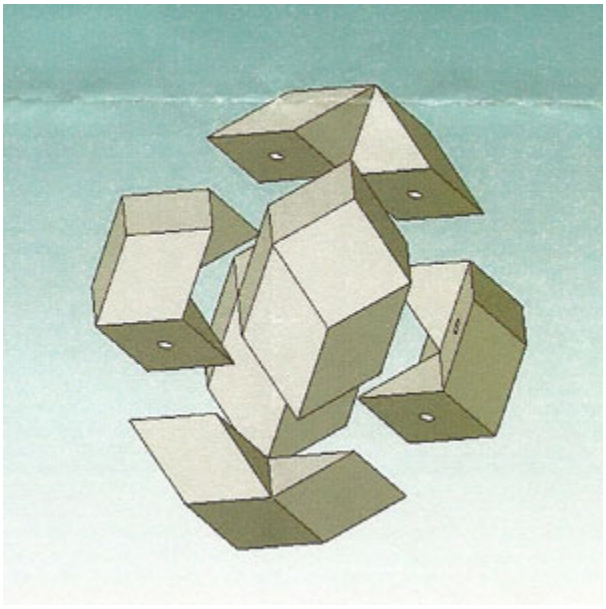
35 Martingar

Puzzle Solution:



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36 Missyobako

Puzzle Goal: **Get the cord out of the loop so you can remove the lid.**

Materials: Ash, plywood

Classification: Disentanglement

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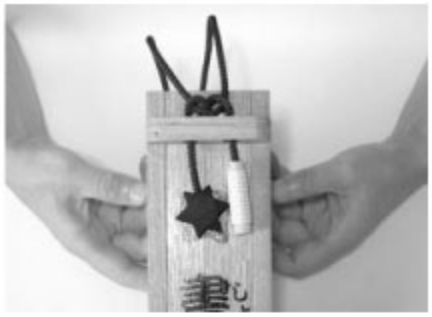
36 Missyobako

Puzzle Solution:

Untieing the cord to remove the lid.

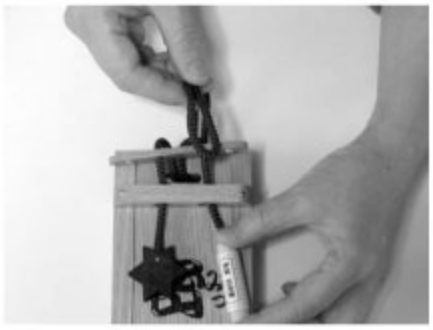


1. Pull the Ninjas' scroll and Syuriken(throwing star) cords until they reach the bar with two holes.

2. Separete the bar with small holes from the bar with big holes.
The bar with small holes connects with the bar with big holes by magnets.

3. Pull the cord loop and push the cord loop through the big hole.

4. Pull the Syuriken through the cord loop you made.



5. Repeat for the Ninjas' scroll.

6. Remove the lid.

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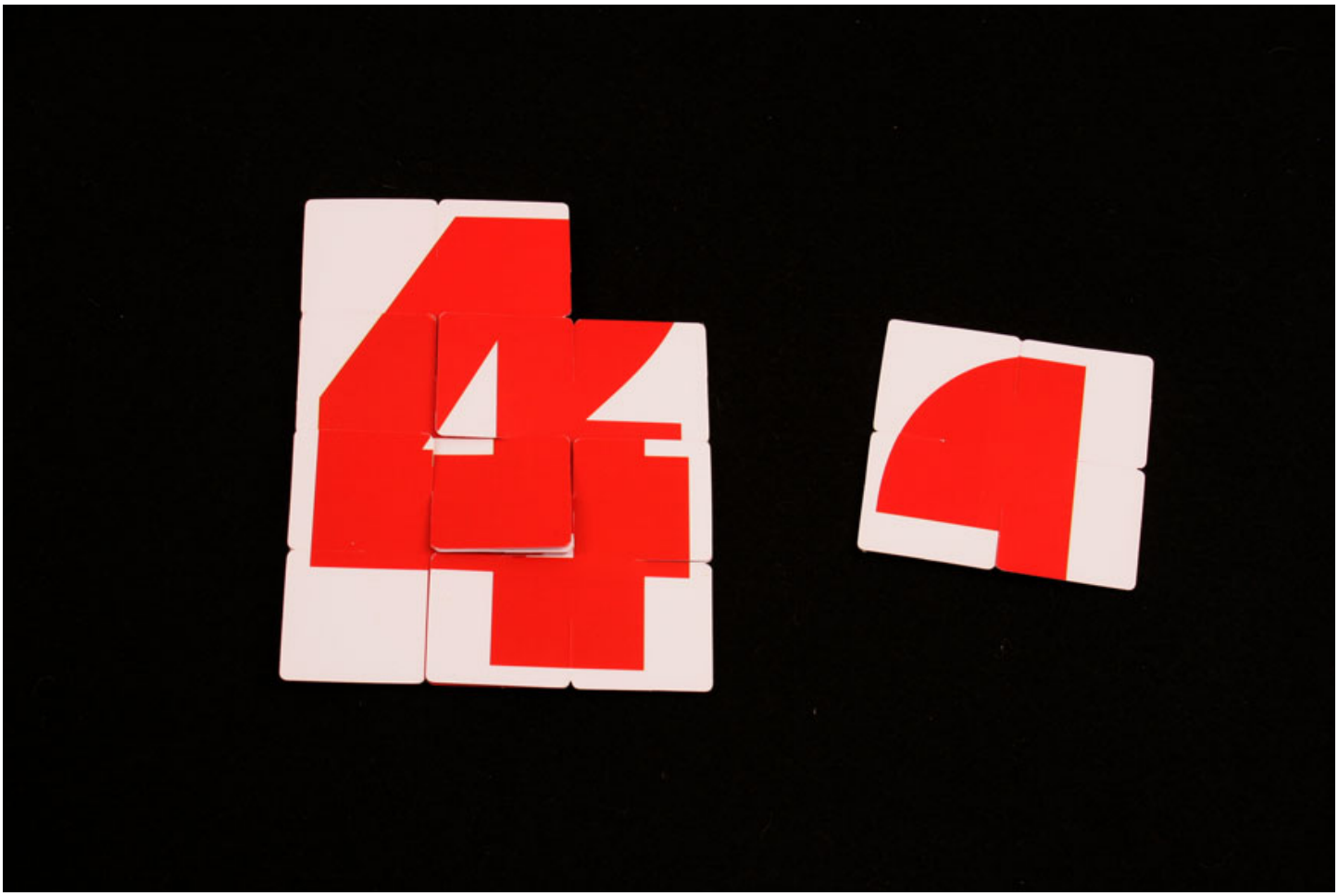
37 Mozaniac Numbers

Puzzle Goal: **Make the numbers 1 to 4 from the same six pieces.**

Materials: Laminated paper

Classification: Slocum 1.2



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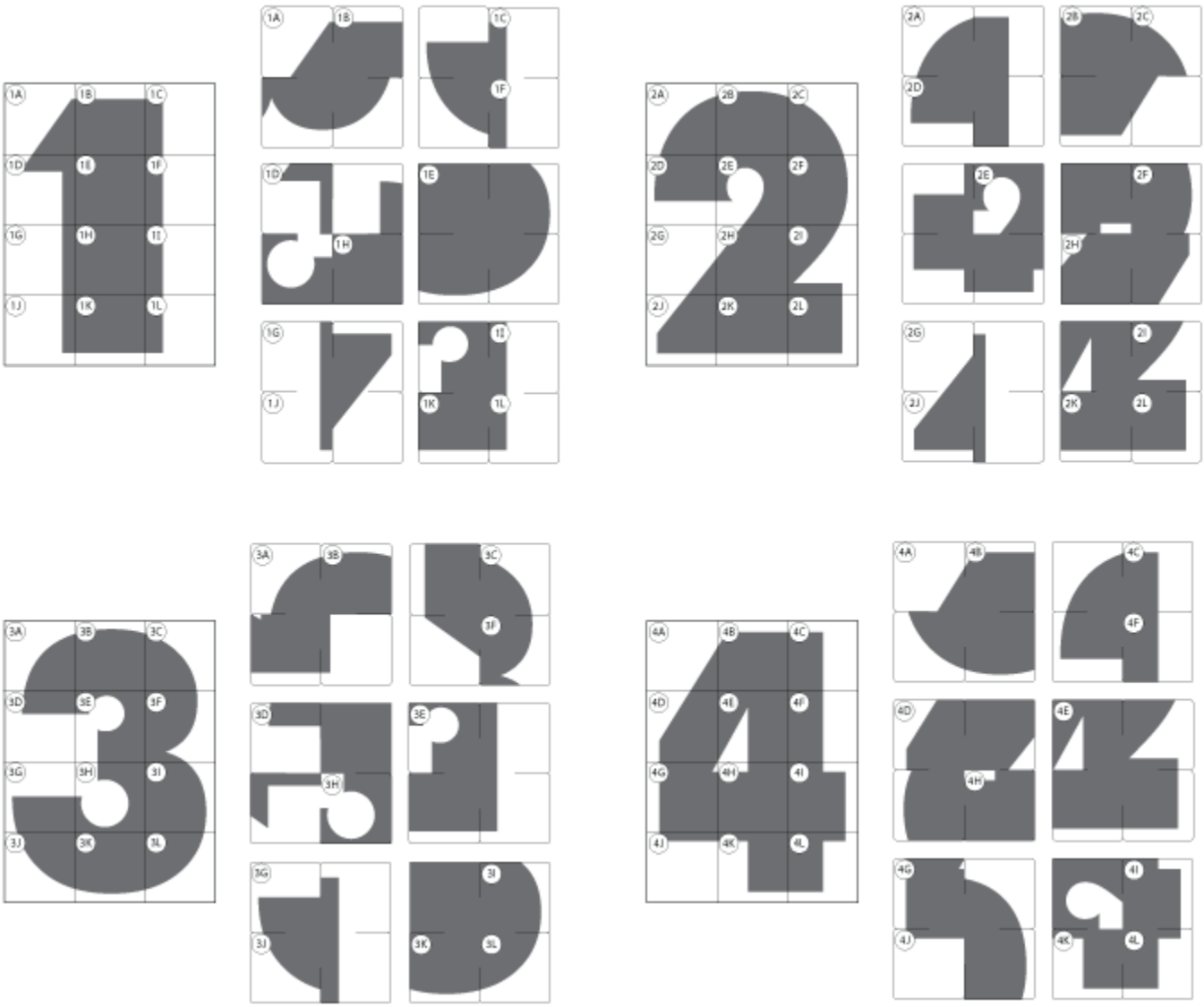
37 Mozaniac Numbers

Puzzle Solution:



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38

ODD Puzzle

Puzzle Goal: **Place all three pieces into the box so that none of them sticks out.**

Materials: Pieces: rengas and movingui; box: oak and walnut

Classification: 1.2 3-Dimensional assembly

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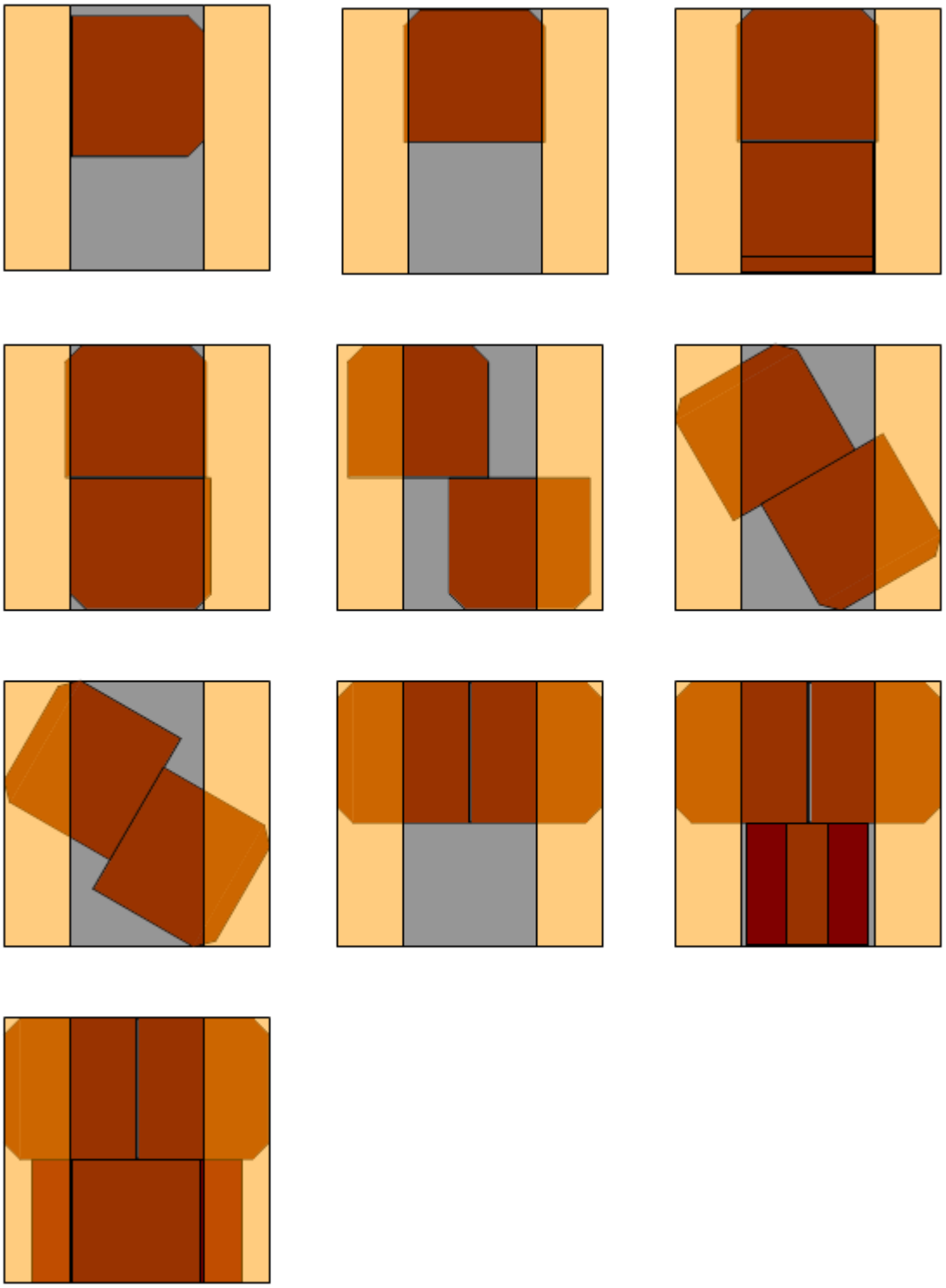
38 ODD Puzzle

Puzzle Solution:



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39 PENTAPARADOX-21

Puzzle Goal: **Is it possible to add one more element (the cross) into the tray with 20 elements already filled?**

Materials: Plastic

Classification: 2-D Packing

Notes: The pieces of the puzzle constitute a complete set of flattened pentominoes: 21 pieces. The chosen compression ratio of 17/25 enables the ambiguous tray dimensions. Beside the cross element, any piece of the set can serve as the "extra" element to be added.

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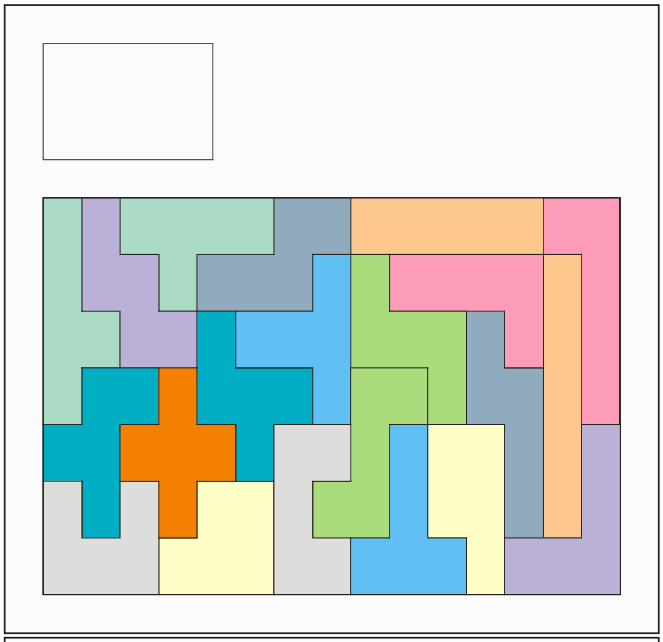
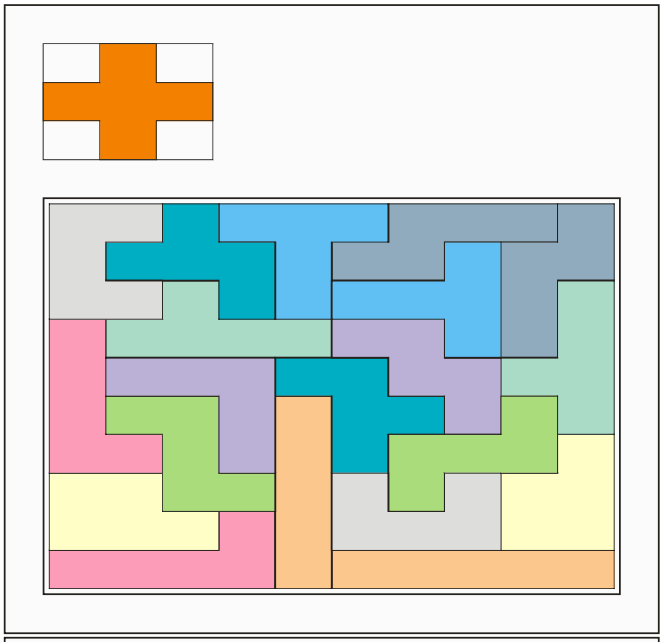
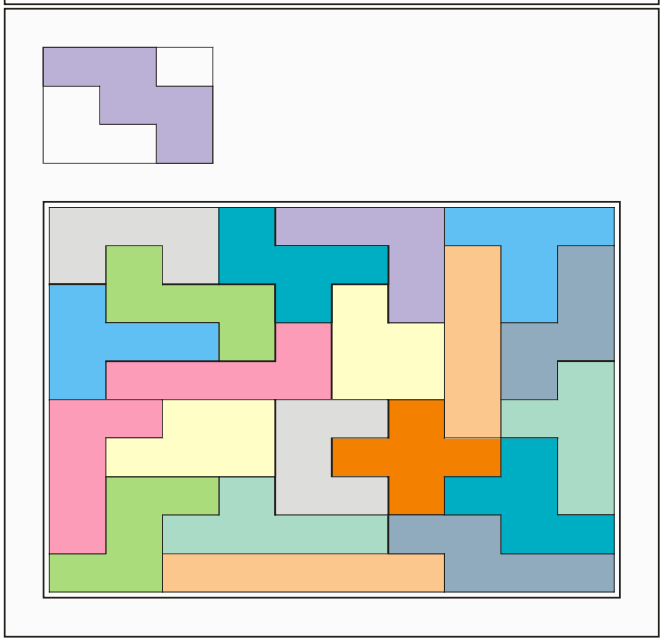
39 PENTAPARADOX-21

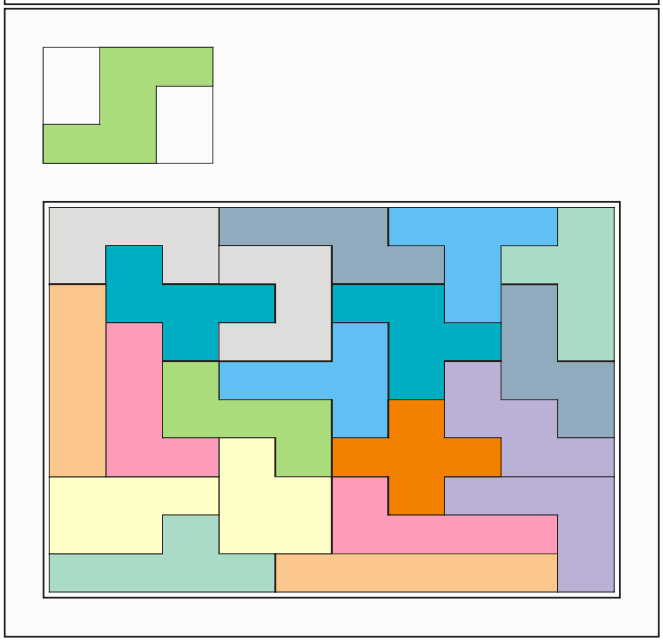
Puzzle Solution:

Sample solutions:









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40

Penta-Puzzle

Puzzle Goal: **Assemble the twelve pieces into a spheroid of six symmetrically interlocking pentagons.**

Materials: Combination of six different woods and 24 magnets

Classification: Put-together interlocking burr, and dexterity

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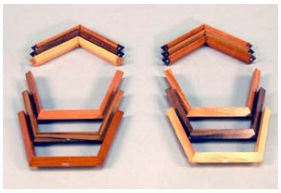
40 Penta-Puzzle

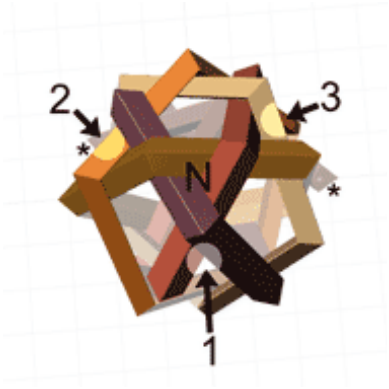
Puzzle Solution:

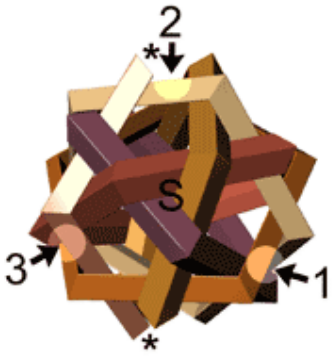


Separate the pieces into two groups each with three three-edge pieces and three two-edge pieces, and so no two pieces of the same wood are in the same group. One group will be used to build the North half and one will build the South half.

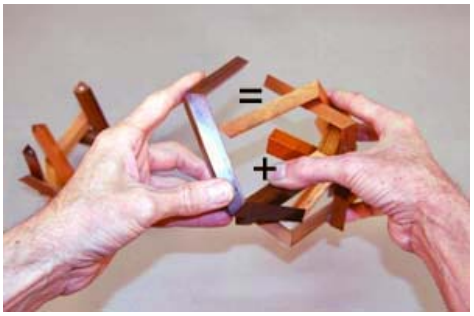
Using only pieces from the first group, construct the figure on the right. This is a pretty loose assembly and can fall apart fairly easily but it will support itself if you set it down on the center three vertices with the legs standing up. The way to hold this assembly securely is to use a *three point grip*, by applying pressure at the three arrows.

From the second group, add two of the three three-edge pieces, and then add each of the remaining two-edge pieces. These last three pieces determine the "North Pole" (N), and the gap for the remaining three-edge piece is marked by the two asterisks.





Now you must separate this into the North and South halves. Grip the halves using the points shown in the two figures on the right (placing your thumbs at positions #1), and then carefully but firmly pull them apart—remember you're overcoming the strength of ten pairs of magnets all at once. Gently put the South half down and roll it over from its side onto the three South vertices.



Pick up the remaining three-edge piece. The middle edge goes between the two legs that form the notch where your thumb is (+), and the far edge goes between the two legs that make the "=" notch. Move your thumb over to grip the new piece.

Now join the North and South halves, either by picking up the South half or just lowering the North half on top of the South. As they get close enough to mating, the South half should jump up to meet the top half. That's it!

Once you put it down or play with it a bit you may have a hard time finding the north and south poles again. You need to identify these points exactly to get the correct three point grips on it again in order to pull the puzzle apart; otherwise you could damage some pieces.

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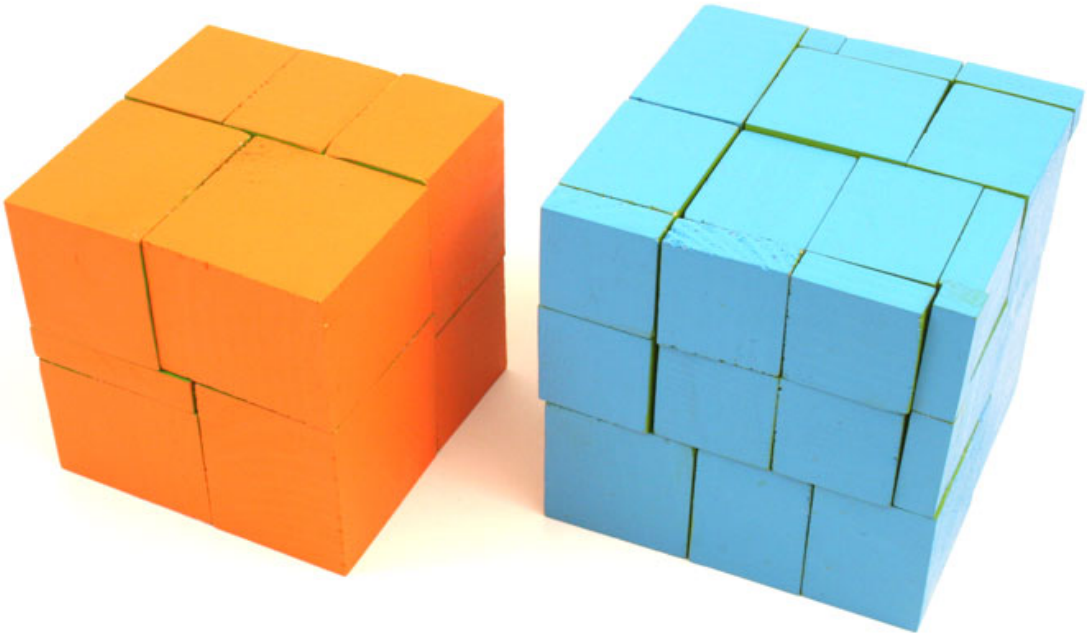
41 Ramanujan's Box

Puzzle Goal: **1729 is the Hardy-Ramanujan number: the smallest integer that is the sum of two positive cubes in two different ways. Assemble the 38 colored cuboids in the following three ways: a 9^3 cube and a 10^3 cube; a 12^3 cube and a 1^3 cube; and finally, a single 19 x 13 x 7 cuboid. Each cuboid must be in a single color.**

Materials: Painted wood

Classification: Take-apart



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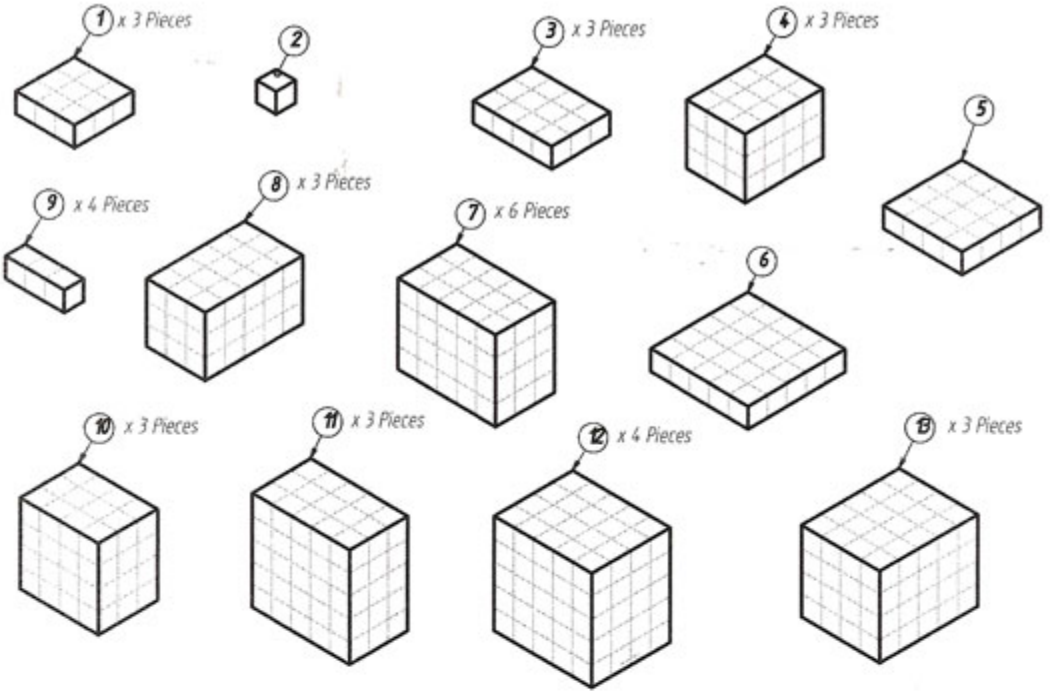
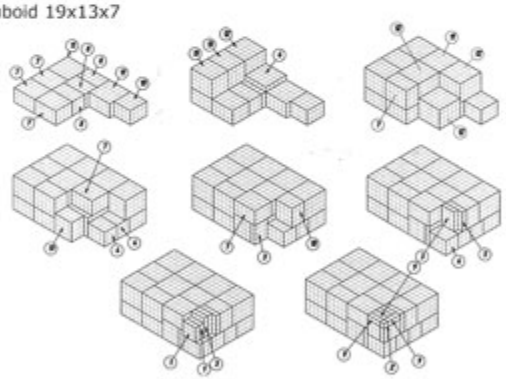
41 Ramanujan's Box

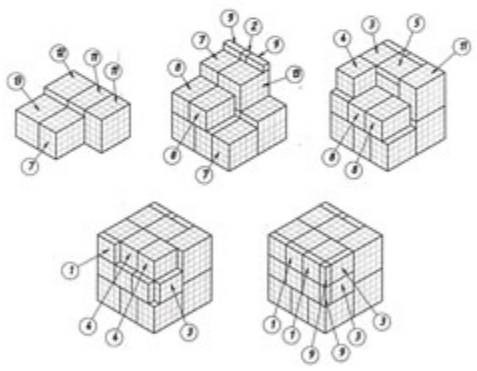
Puzzle Solution:



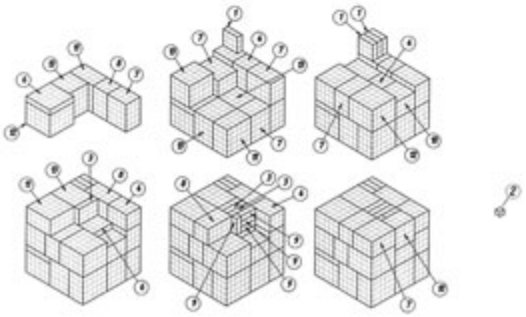
Cuboid 19x13x7



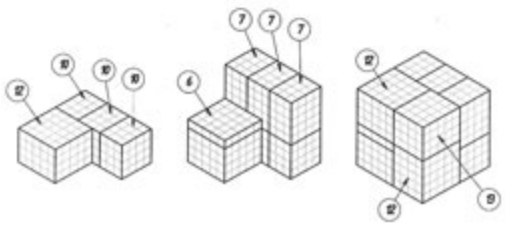
Box 10^3



Box $12^3 + 1^3$



Box 9^3



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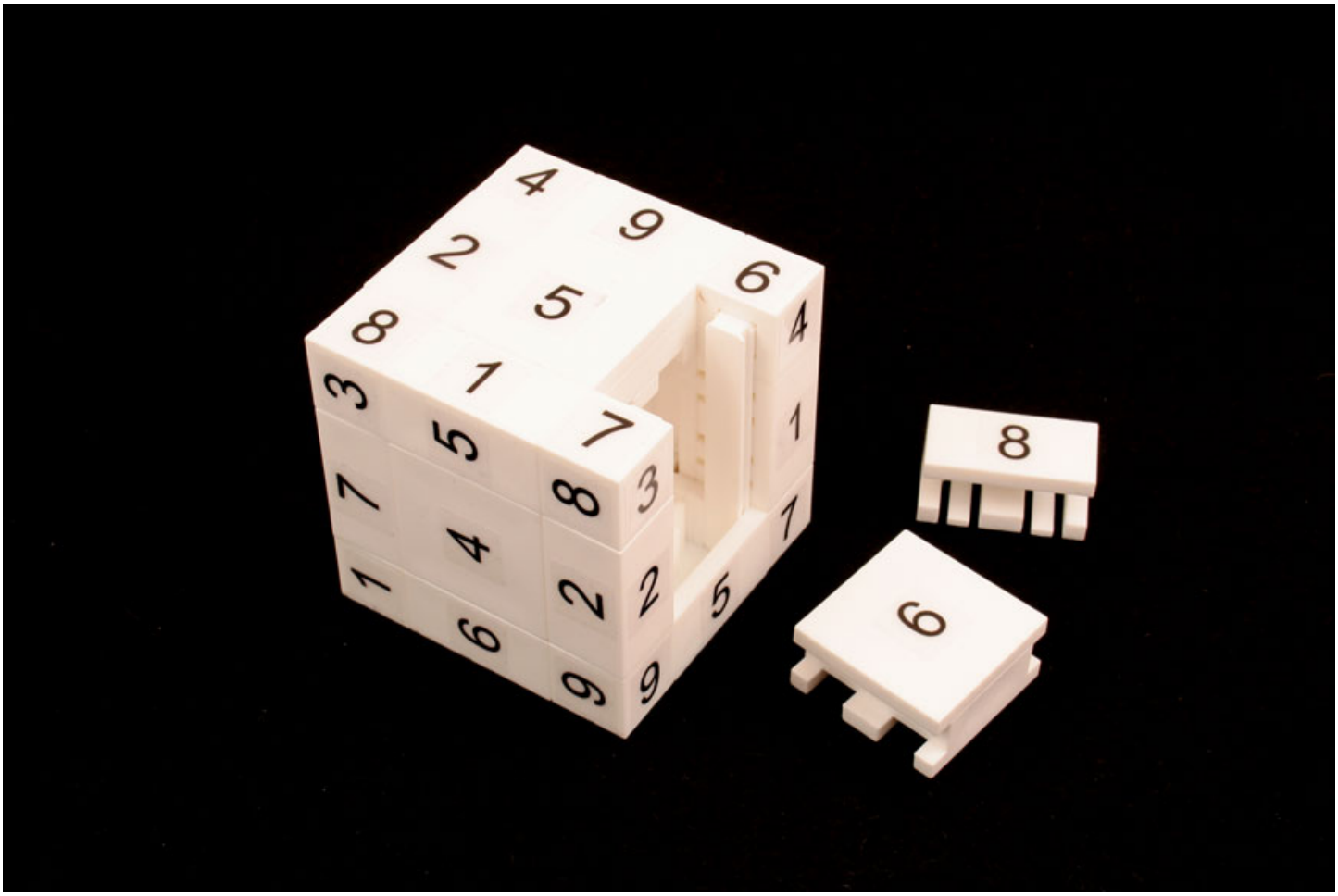
42

rekubus

Puzzle Goal: **First, simply assemble a cube from the 38 pieces, and then assemble the cube so that each face has each of the digits 1-9.**

Materials: Polystyrol

Classification: Put-together



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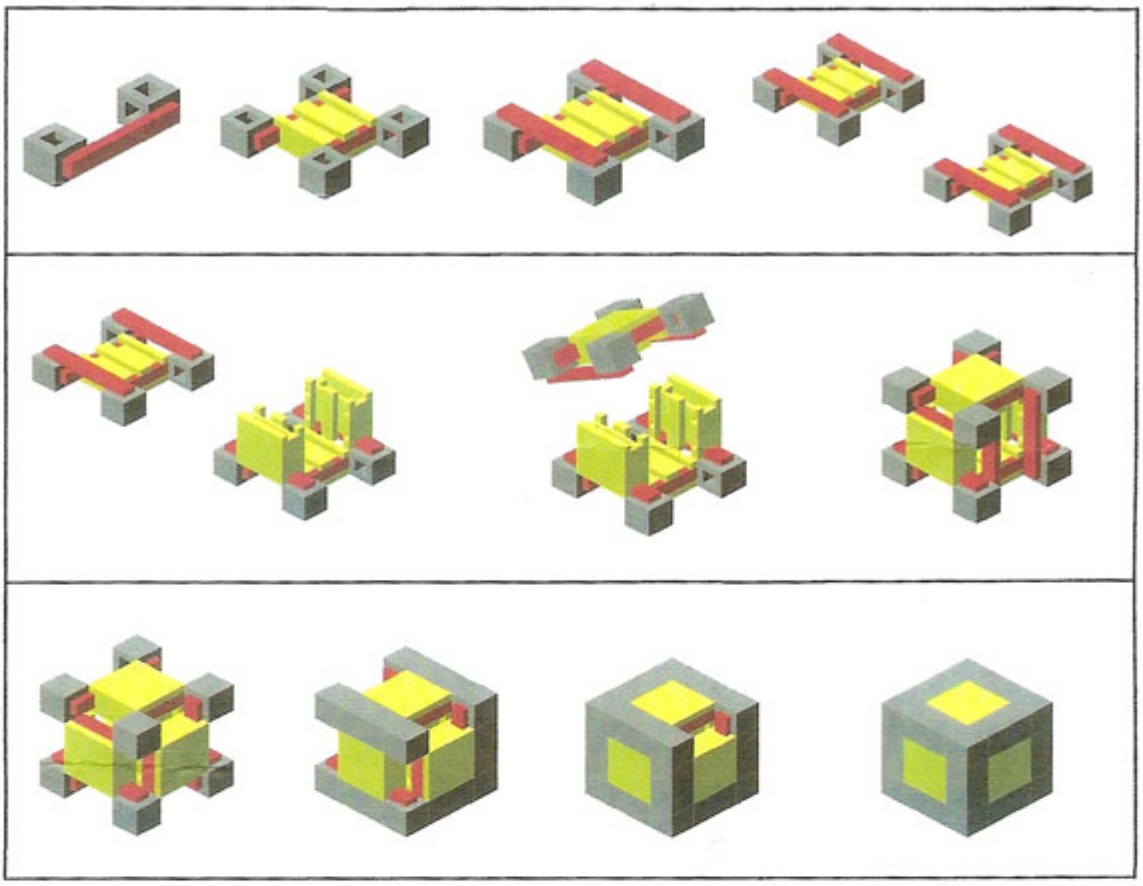
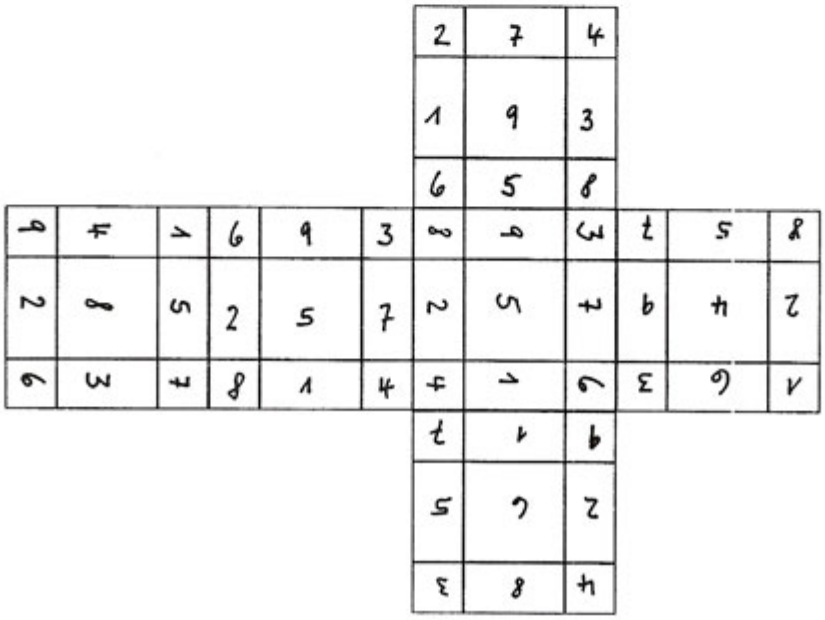
42 rekubus

Puzzle Solution:





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43

RondoMagic

Puzzle Goal: **Manually reverse the three outer pieces of the path by 180 degrees to get the starting position, and then restore the original path using the rotation tool (rotating three adjacent pieces simultaneously).**

Materials: Birch plywood, acrylic, metal screws, magnets

Classification: SEQ-RT2D

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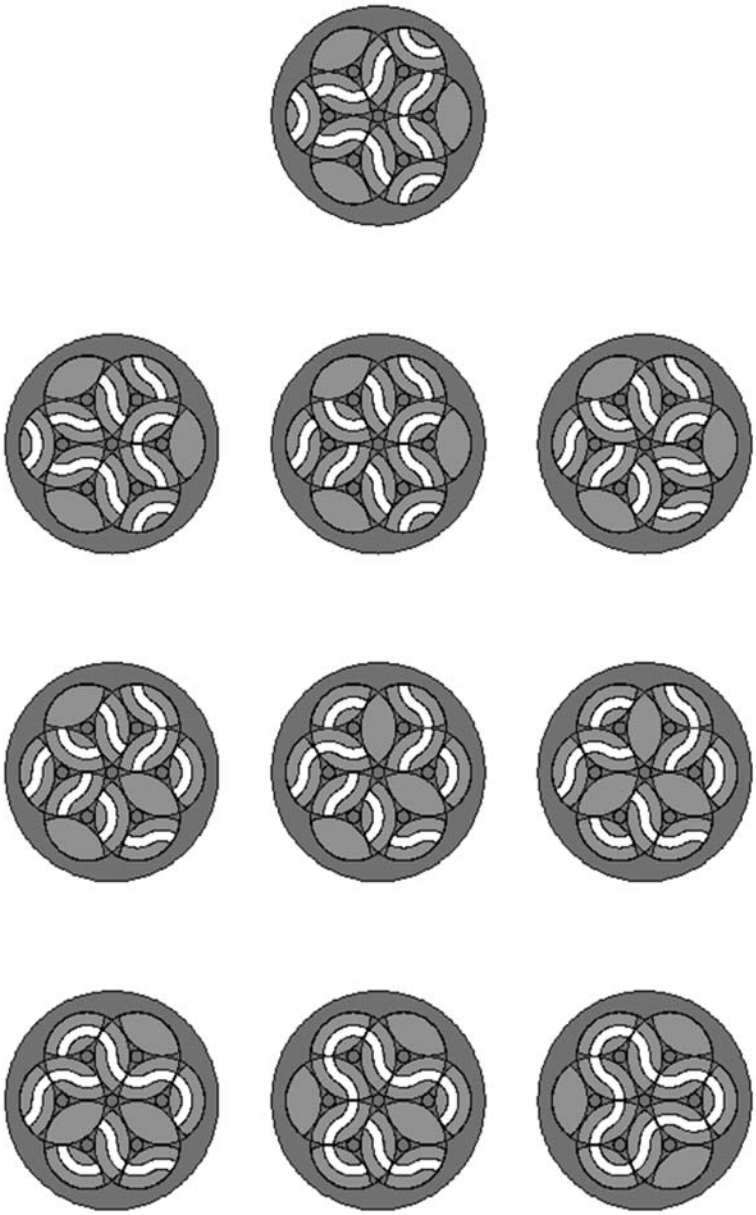
43 RondoMagic

Puzzle Solution:



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44

Secret Base

Puzzle Goal: **Find the two secret compartments.**

Materials: Shiuri cherry, oak, zebrawood, rengas, keyaki, and katura

Classification: Take-apart

Notes: The craftsman often watched TV robot animation. When a bad enemy destroys the town and the peace of the people, the shutter of a secret base that is hidden under the ground opens and a robot of the justice comes out to save the peace. It was an exciting scene. The shutter is the motif of this work.

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44 Secret Base

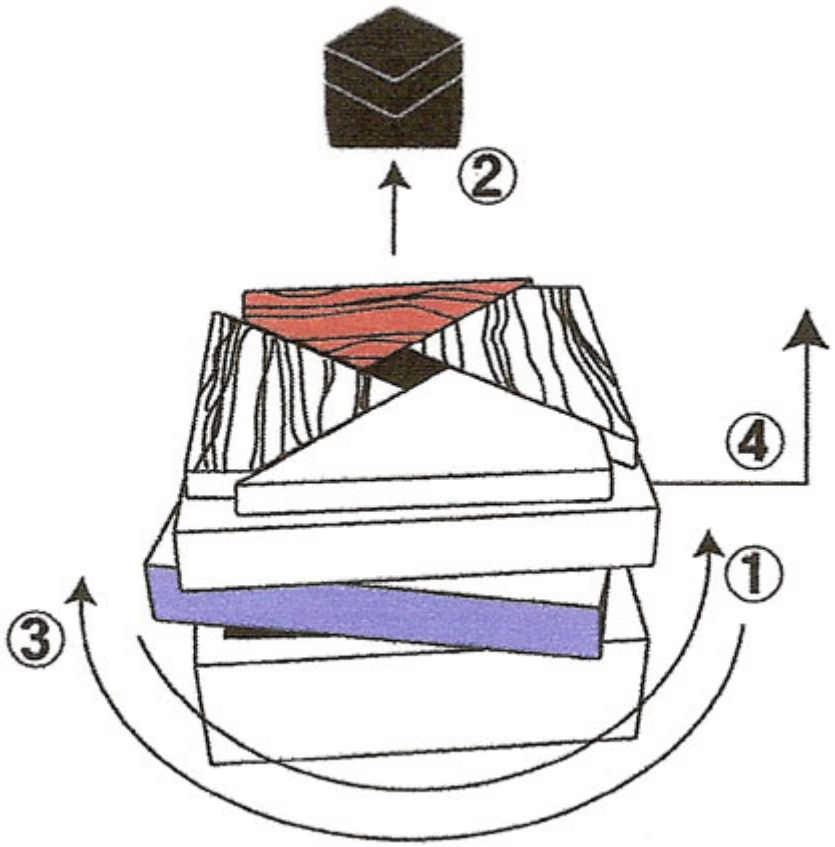
Puzzle Solution:

First compartment:

- Turn the middle layer right.
- Pick up the knob.

Second compartment:

- Don't put back the knob.
- Turn the middle layer to the left.
- Slide and pick up the top two layers.



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45

Simple Zero

Puzzle Goal: **Make the 2x3 pattern shown on the puzzle body. Note that the middle gaps in the long edges do not fold.**

Materials: Plastic board

Classification: Folding

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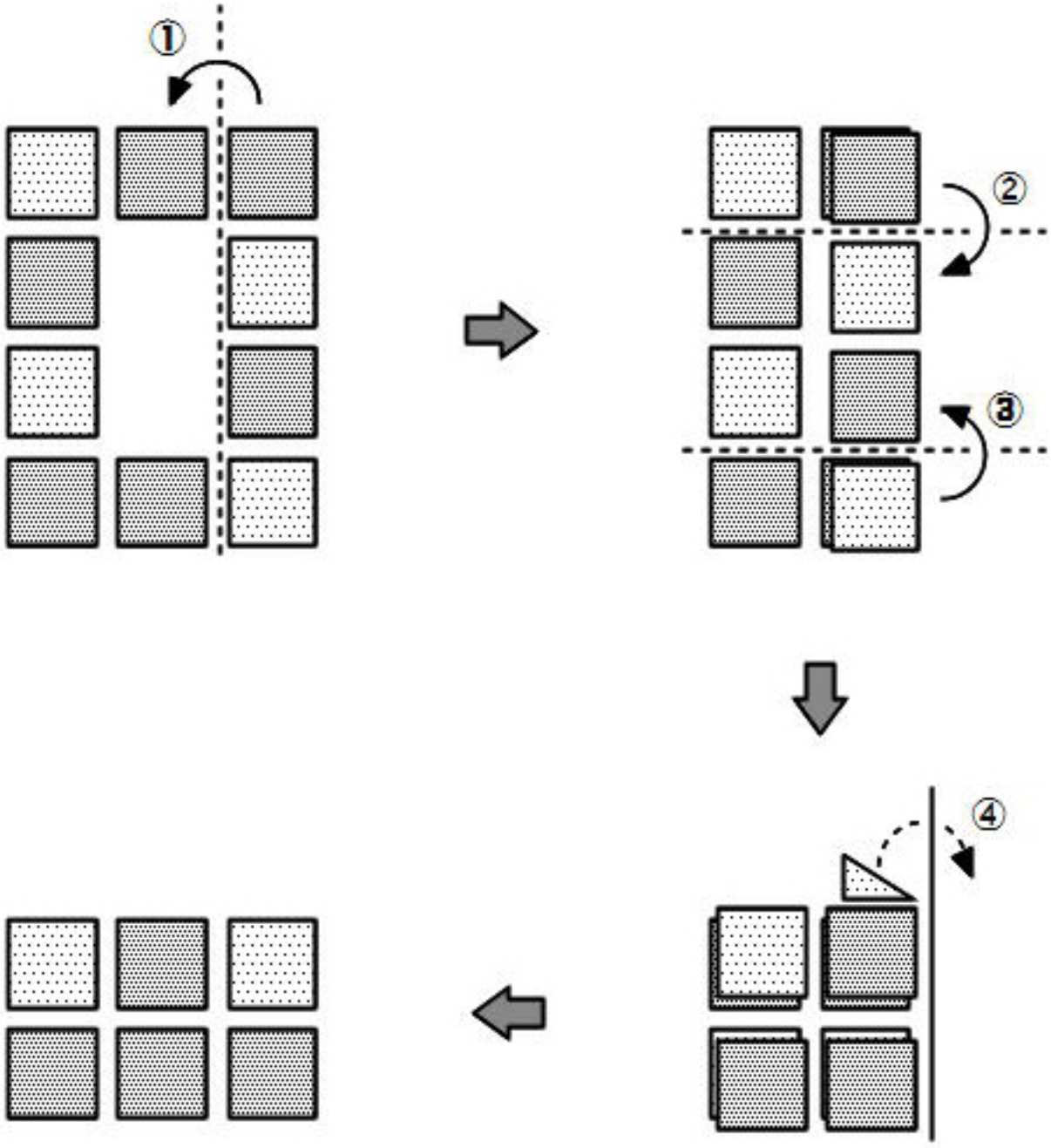
45 Simple Zero

Puzzle Solution:



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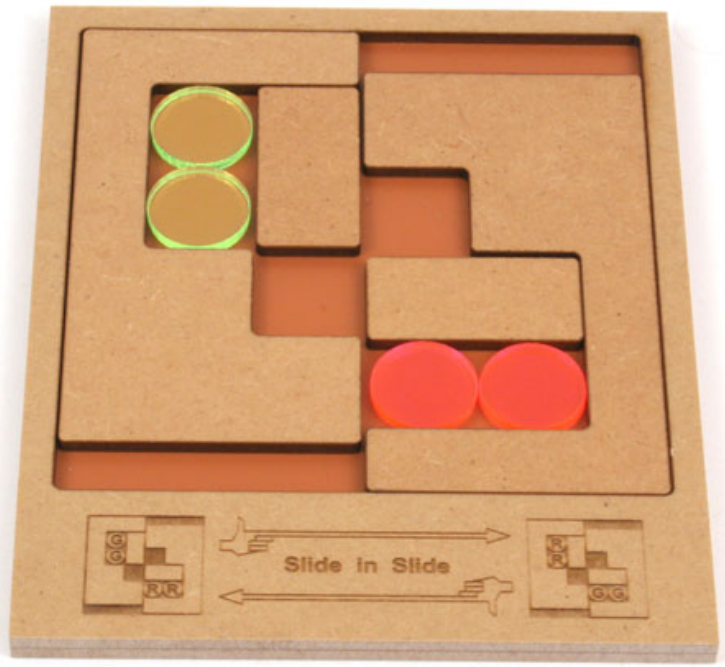
46

Slide in Slide

Puzzle Goal: **Swap the positions of the green and red pieces.**

Materials: MDF board and acrylic

Classification: Sliding piece



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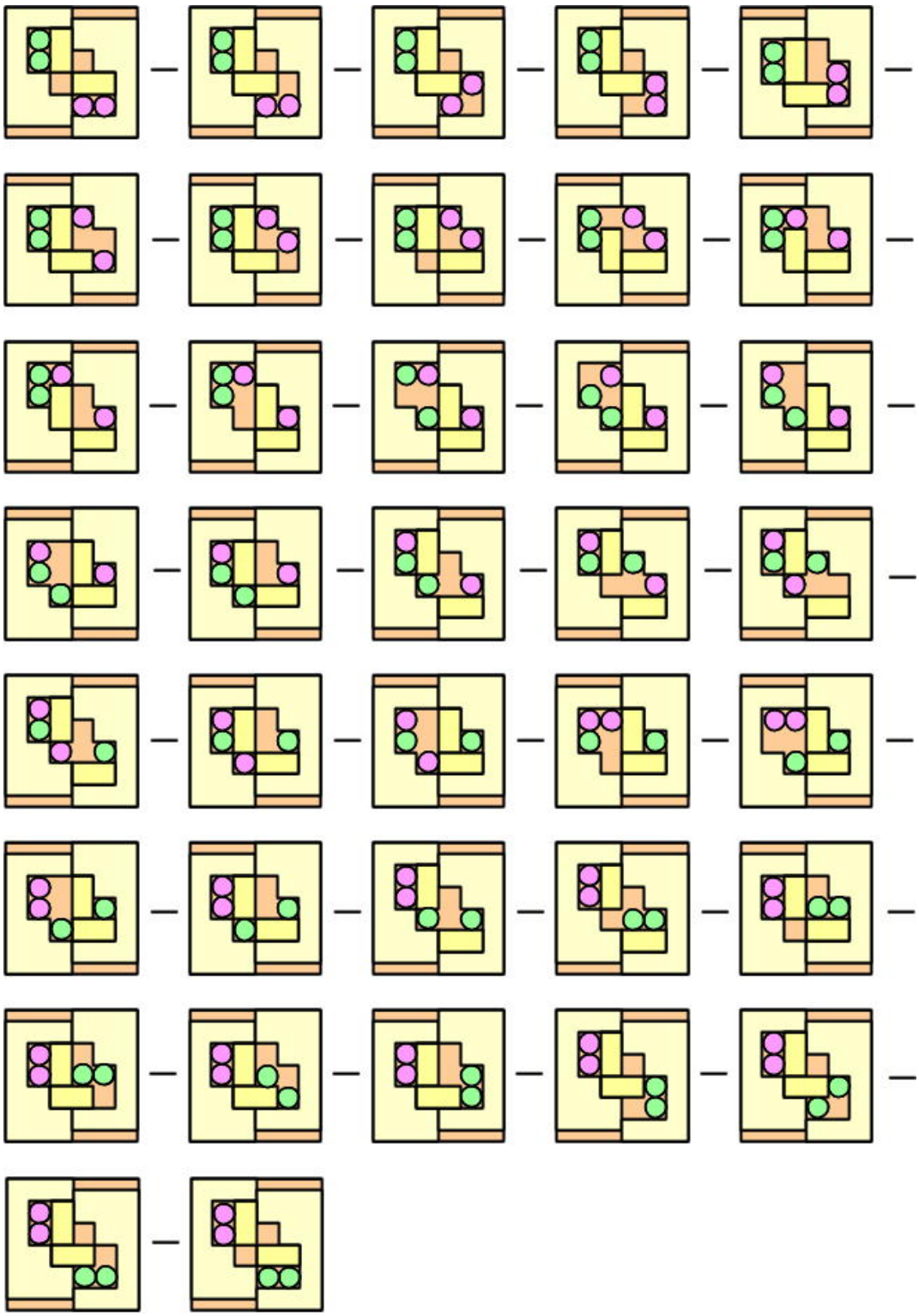
46 Slide in Slide

Puzzle Solution:



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47

Spade & Heart

Puzzle Goal: **Use all four pieces to make a spade; then make the triangle "disappear" by using all four pieces to make a heart.**

Materials: Acrylite

Classification: 1.1 2-Dimensional assembly, and 8. vanishing

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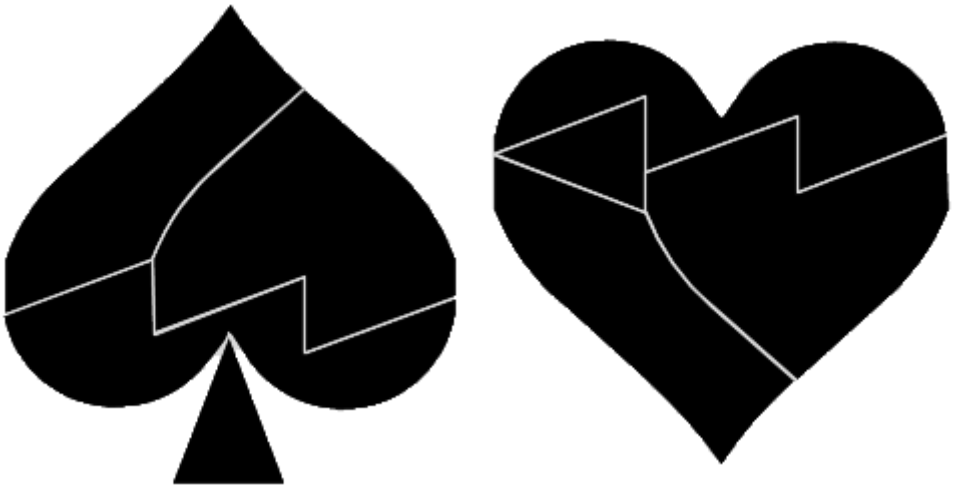
47 Spade & Heart

Puzzle Solution:



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48

Straight Forward

Puzzle Goal: **Move ball the bearing in a straight line from START to FINISH.**

Materials: Queensland blackbean

Classification: Hidden mechanism

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48 Straight Forward

Puzzle Solution:

Hold the puzzle with the Mr Puzzle brand and the word FINISH in your right hand. Put you thumb on the perspex as shown in photo.

Give the puzzle a very light tap on the palm of your left hand.

At exactly the same time that the puzzle hits your left hand slide the perspex cover away from you (ie: away from the Mr Puzzle brand).

If you get this co-ordinated movement exactly correct the perspex will slide forward about 5mm. If you tip the puzzle upside down you will be able to grasp the end with FINISH written on it.

With the perspex raised there is space to allow the ball bearing to jump the middle brass rod to get the ball bearing to the other end of the maze.

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49

Sweet Deceiver

Puzzle Goal: **Disassemble and reassemble the unusual Diagonal Burr.**

Materials: Bocote, Peruvian walnut, and yellowheart

Classification: Slocum: 3.4 (Interlocking) burr

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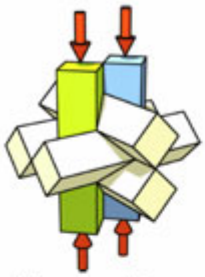
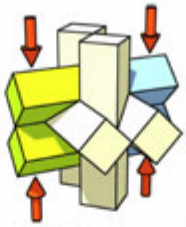
49 Sweet Deceiver

Puzzle Solution:

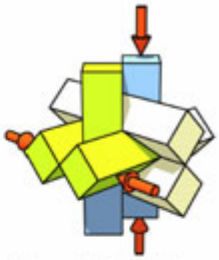
The *Sweet Deceiver* looks like any ordinary *Diagonal Burr*, but is in fact a 3-piece coordinate motion puzzle. It has some characteristics of both its ancestors, i.e. the classic *Diagonal Burr* and *Pseudo-Notched Sticks*. Unlike those, neither a 'face grip' (*Diagonal Burr)* or an 'edge grip' (*Pseudo-Notched Sticks*) will separate the puzzle, but a combination of both – 'crossed grip' – is needed.



Diagonal Burr
(*Unknown*)
→ 'Face grip'



Pseudo-Notched Sticks
(© 1985, Stewart T. Coffin)
→ 'Edge grip'

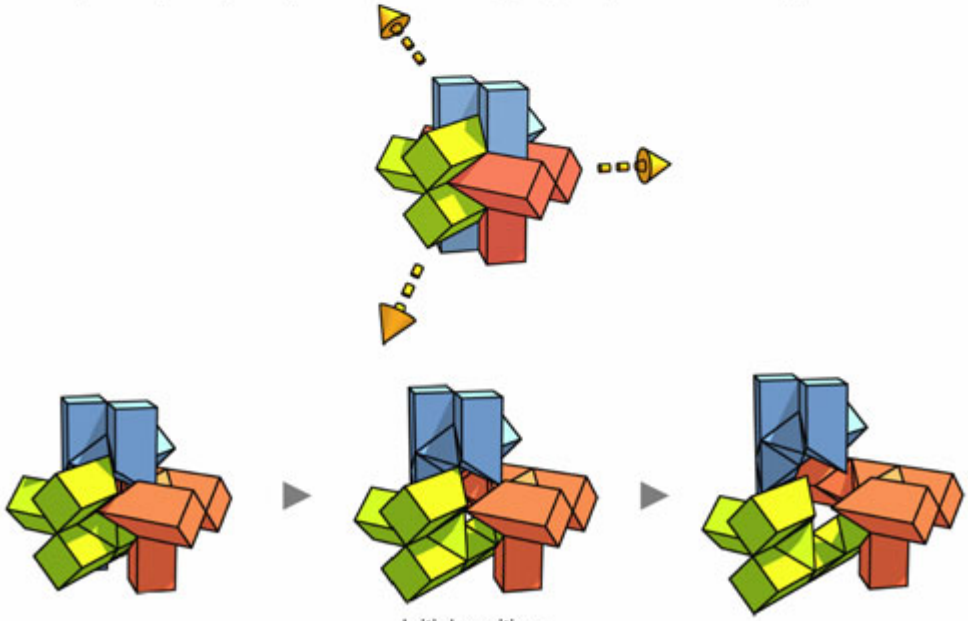


Sweet Deceiver
(© 2007)
→ 'Crossed grip'

If the puzzle can't be disassembled even when using this 'crossed grip', the grips must be switched between hands (or rotate the puzzle 180° along its vertical axis). Note that other – less usual – grips are possible, but all of these involve a 'face-edge' combination and/or a 90° orientation difference in respect to each other.

Disassembling Sweet Deceiver

Whereas the *Diagonal Burr* and Coffin's *Pseudo-Notched Sticks* can be pulled apart by moving both hands in opposite directions (180°), with *Sweet Deceiver* an angle of 120° is required (and perhaps also a little wiggling may be necessary).



Initial positions
for reassembling

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50

Tangerine

Puzzle Goal: **Take apart and put together.**

Materials: ABS plastic

Classification: Take-apart

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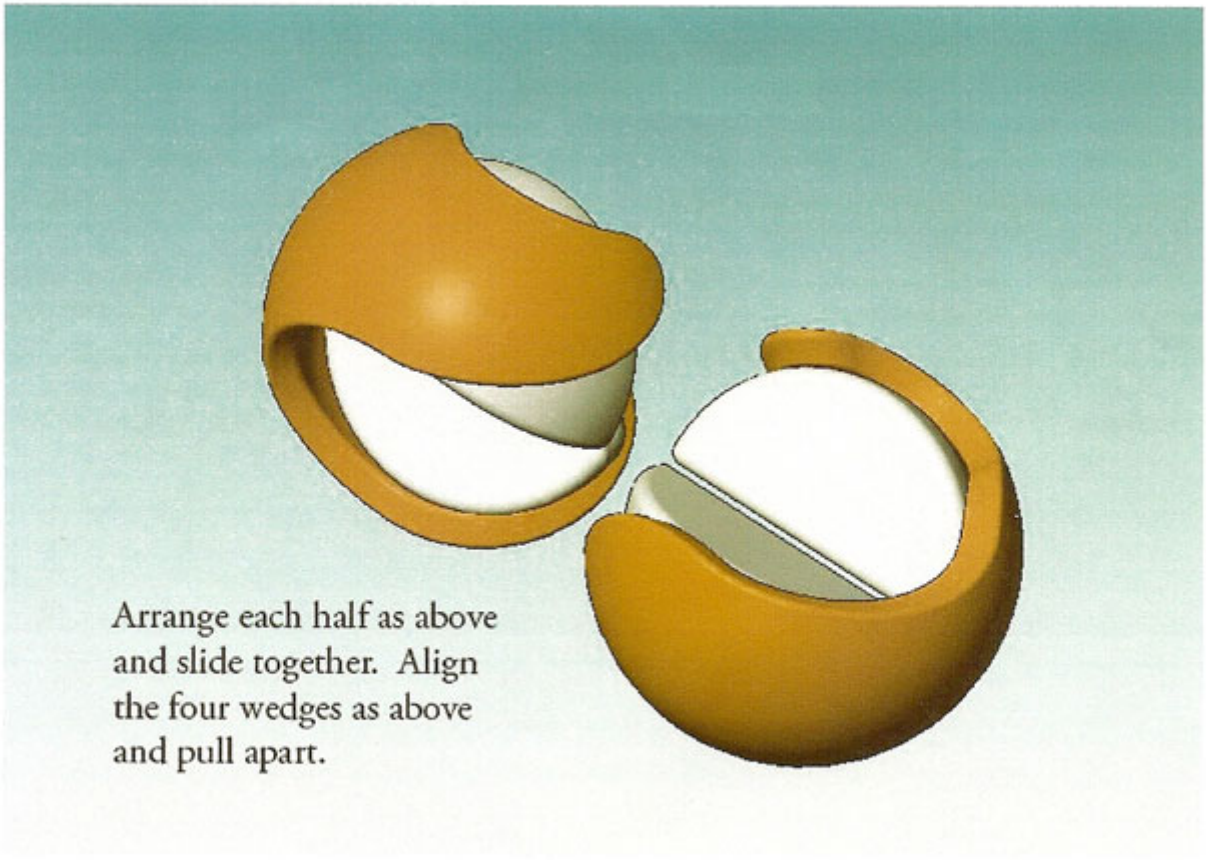
50 Tangerine

Puzzle Solution:



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51

Tease

Puzzle Goal: **Disassemble and reassemble the five pieces to form a cube.**

Materials: Mahogany and Oak

Classification: INT - CART

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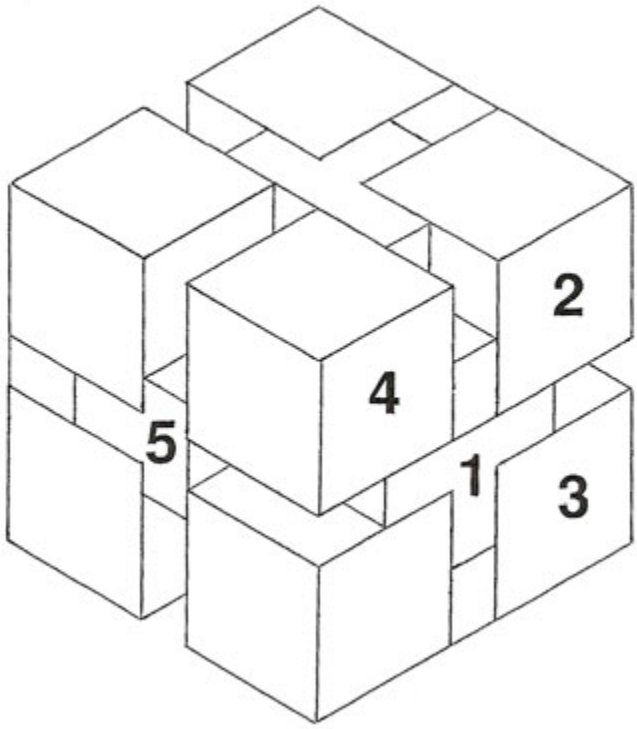
51 Tease

Puzzle Solution:



Orient the cube as in the picture. Note that there are three T shapes, one smaller than the others.

- Push in #1.
- Squeeze #2 and #3 together.
- Pull out #4.
- Push in #5. Also, #5 goes up a level.
- #1 can go inside cube then exit.
- #3 can exit (this is the notched piece).
- Finally #5 is taken out.

Restoring the puzzle: this is the reverse of the above, making sure the wood grain of the pieces match each other. Replacing piece #4 needs a slight twist.

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52 Three Pyramids of Geezer

Puzzle Goal: **Assemble the three sets of 6 ball-pentomino pieces to make three 4-level square-based pyramids.**

Materials: acrylic, polyethylene, and steel pins

Classification: Three-Dimensional Assembly

Notes: *Special instructions for the white pieces:* this pyramid requires a small amount of force to snap certain pieces together, which is why it is made with steel joints. All pieces should retain their planar shape throughout, so please try not to rotate or pull apart the joints.

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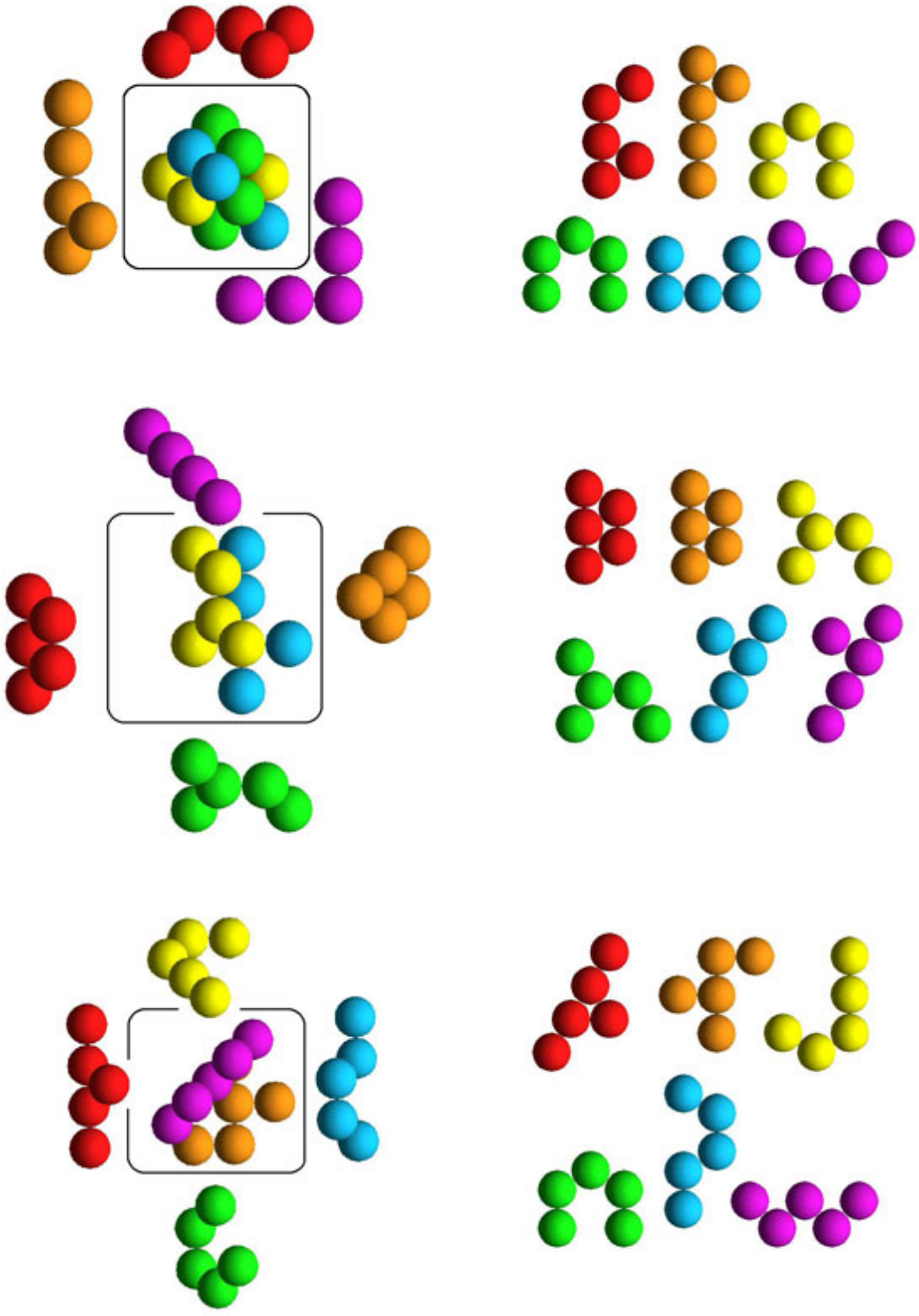
52 Three Pyramids of Geezer

Puzzle Solution:



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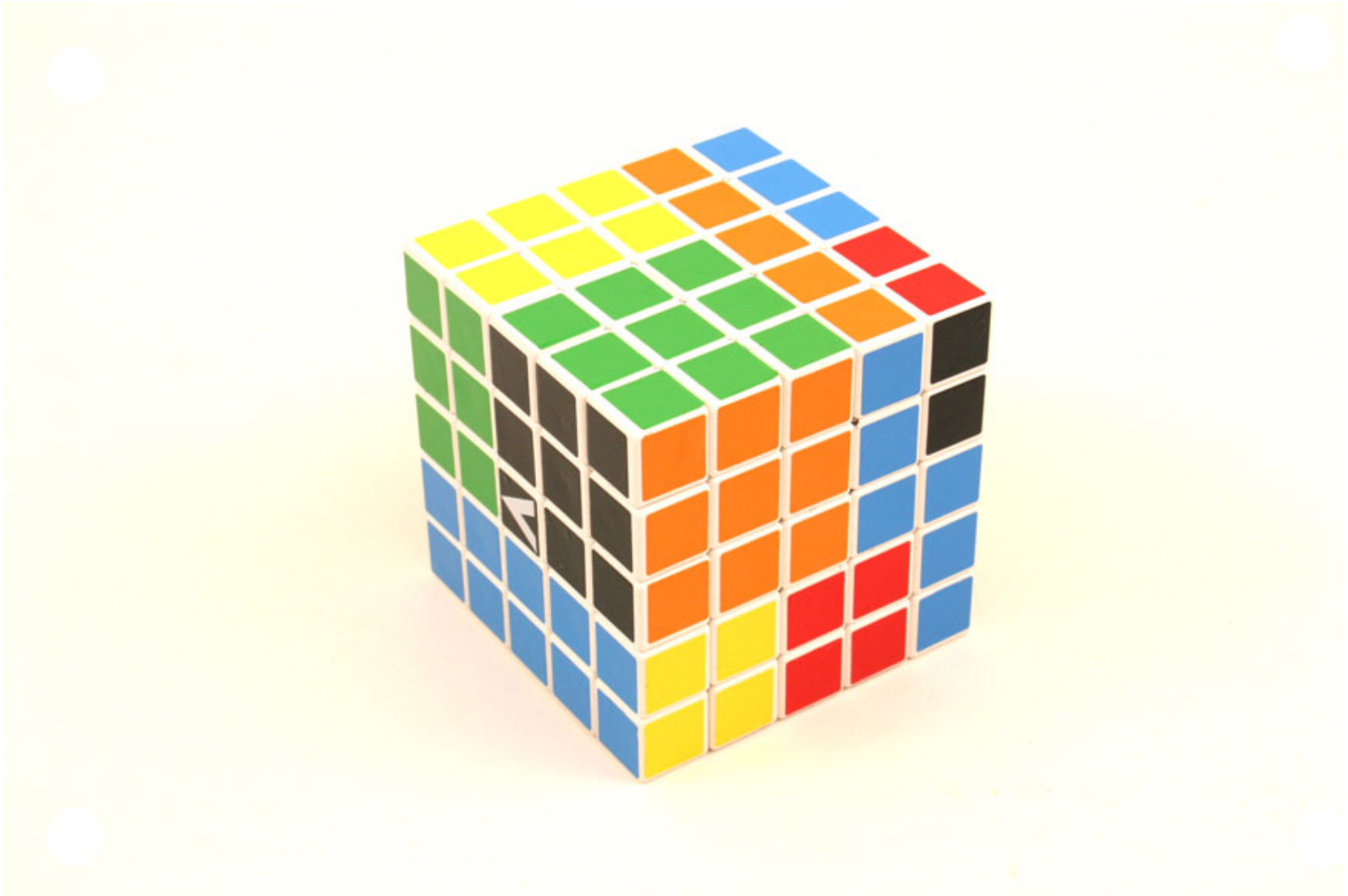
53 V-CUBE 5

Puzzle Goal: **5x5x5 Rubik's Cube: rotate layers to randomize the faces, and then restore each face to a single color.**

Materials: ABS plastic and stickers

Classification: Sequential movement

Notes: Designers claim a new structural design, much sturdier and smoother than Rubik's or Eastsheen's version of the puzzle.



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V-CUBE 5

Puzzle Solution:

Many techniques can be applied in order to solve the puzzle, such as centers first or corners first methods.

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V-CUBE 7

Puzzle Goal: **7x7x7 Rubik's Cube: rotate layers to randomize the faces, and then restore each face to a single color.**

Materials: ABS plastic and stickers

Classification: Sequential movement

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V-CUBE 7

Puzzle Solution:

Many techniques can be applied to solve the puzzle, such as centers first or corners first method.

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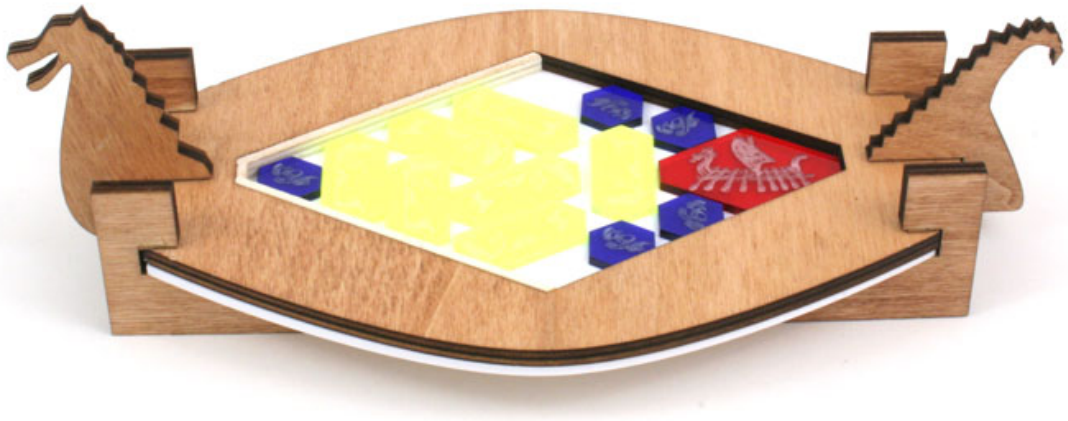
55 Viking's Journey

Puzzle Goal: **Move the red tetrahex piece from the tail to the head of the ship. Pieces can only move whole units in any of six hexagonal directions (no rotation).**

Materials: Laser cut Italian poplar plywood and acrylic in four colors

Classification: 5.3 Sliding piece



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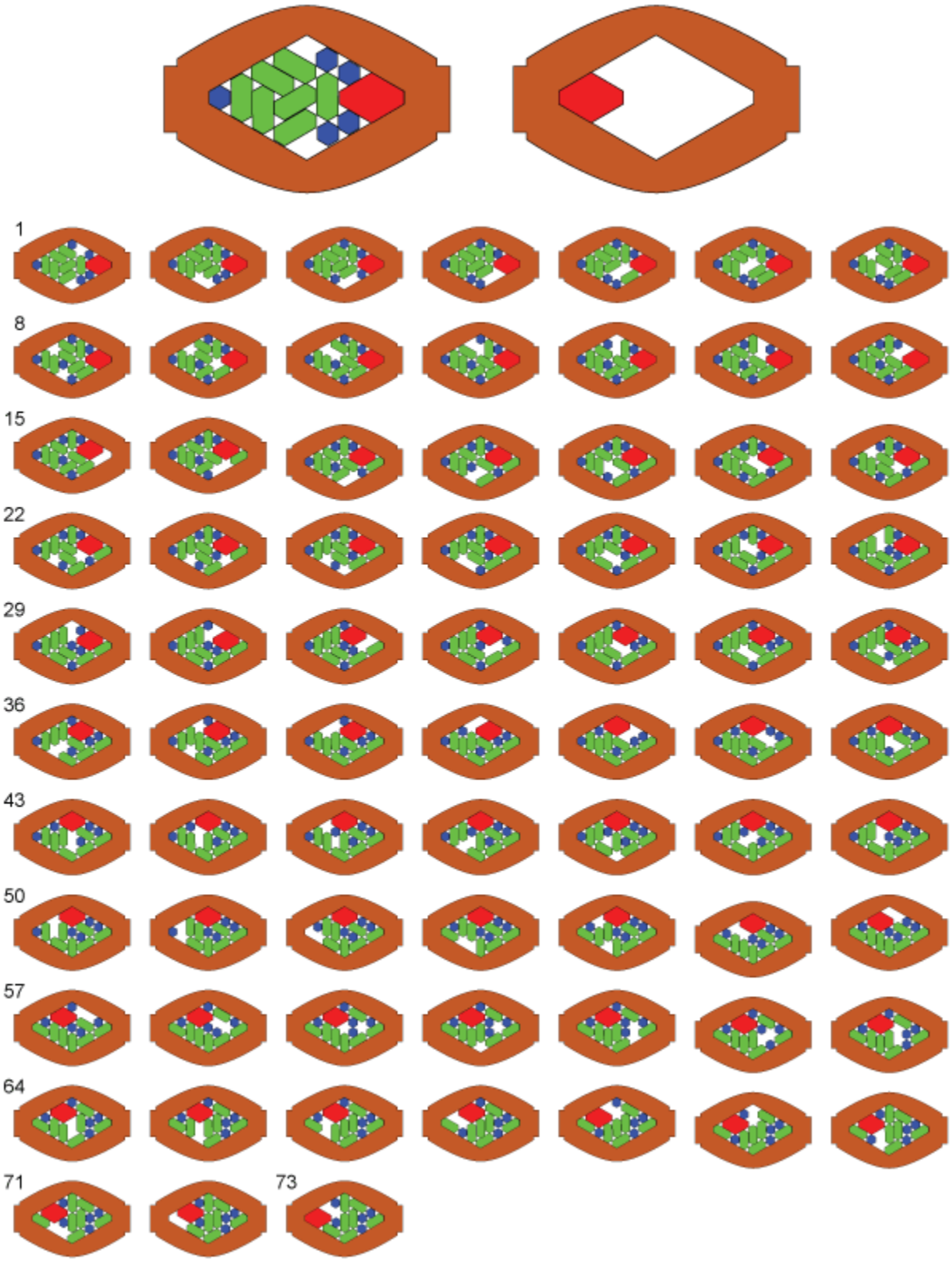
55 Viking's Journey

Puzzle Solution:



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56 Woo Tuck Fook! The Vessel of Prosperity

Puzzle Goal: **Open the vessel in three steps.**

Materials: Australiana woods, electronics

Classification: Slocum 2.1

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56 Woo Tuck Fook! The Vessel of Prosperity

Puzzle Solution:

Three unique mechanisms:

1. Slide the center keys. Lights flash and a tune plays to confirm that magnetic locks are released.

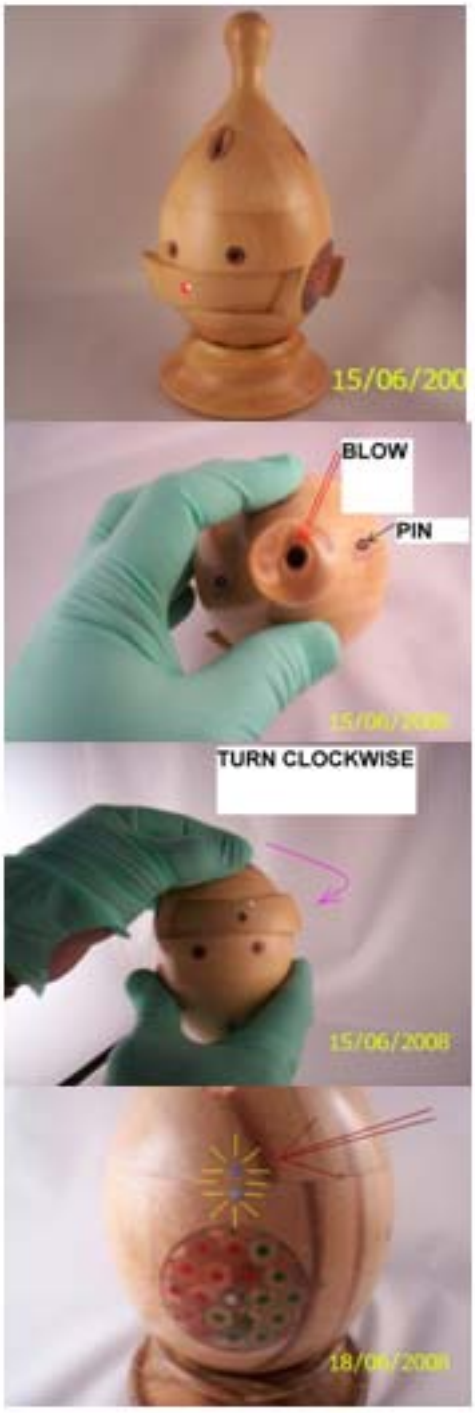
2. Top View. You see 4 eyes, 2 with pins, 2 without. Cover the 2 eyes without pins with your fingers; now blow into center hole (use the ball blower). Alternately, turn upside down and tap nose to palm of other hand repeatedly. Boring, but it works too. Two metal "eyeballs" will appear on the eyes. Air pistons are now activated.

3. Turn upside down. Tighten the case clockwise. It is reverse threaded. Voilà! It opens!

4 On closing, you MUST MATCH the two diamonds. This is the position that aligns the magnetic locks and air pistons. Press the eyeballs back down with fingernail.

This teardrop shape is made from a single piece of 4 x 4 huon pine, with color pencil inserts, bits of electronics, magnets and pins. The wood is over 200 years old and has a distinctive aromatic smell. To reduce waste, the stand is made from the nose top part. The pencil pattern is that of a red heart.

Enjoy WTF! Made for fun!



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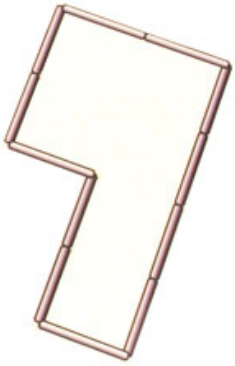
57

Zoo Panic!!

Puzzle Goal: **Use the fences on the four transparent sheets to separate animals into pens containing only the same species (and not separating adjacent animals of the same species).**

Materials: Wooden tray, with paper polyester sheets

Classification: Put-together



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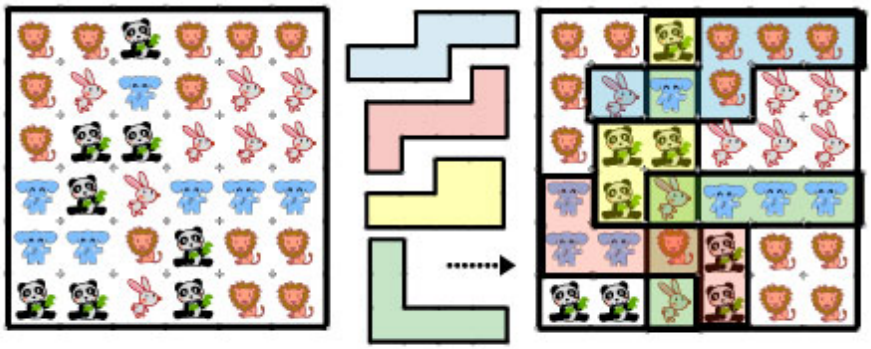
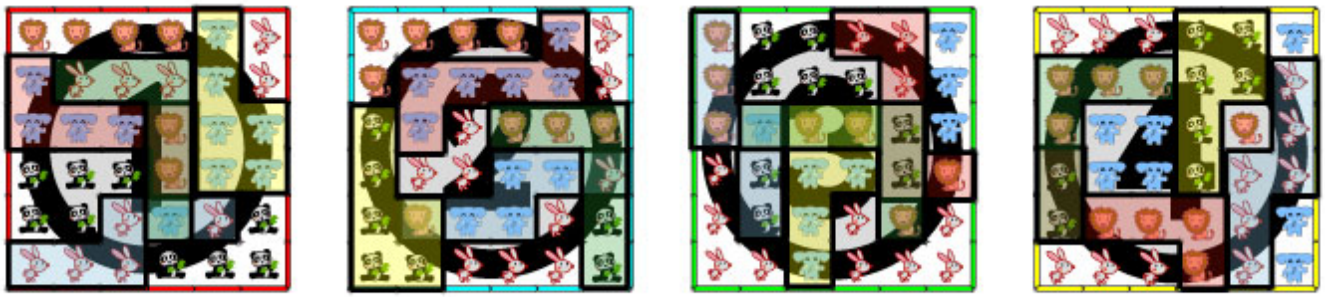
57 Zoo Panic!!

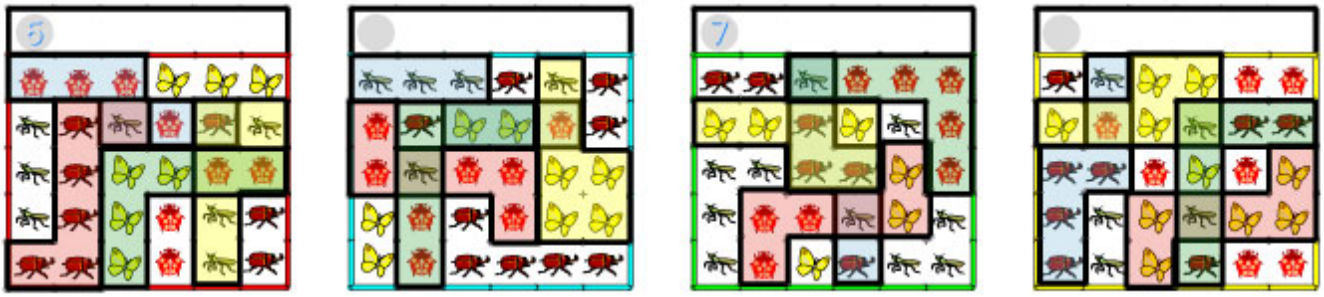
Puzzle Solution:



Problem 6 × 6



Problem 6 × 5



Problem 5 × 5

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